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contents

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Editor Steve Turnbull
Deputy Editor Dunstan Orchard
Production Manager Alan Jones
Art Editor Anthony Broughton

Contributors
Alasdair Bailey, Mike Battersby, Walter Briggs, Mike Buckingham, Ian Burley, Mike Cook, Michael Cowgill, David Dade, Chris Drage, Bruce Goatly, Tony Houghton, Jim Lesurf, John Pettigrew, Jill Regan, Greg Scott, Pam Turnbull, Paul Vigay.
Account Manager David Bradforth
Ad Production Dunstan Orchard
Finance Manager Charlie Moran
Subscription Manager Richard Siggee
Circulation Director Darren Whiteman
Distribution COMAG (01895) 444055
Managing Director Steve Turnbull

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Regulars

Education

Reviews

Hands on

Next month
Next month sees reviews of DrawWorks Millennium, TopModel2, Messenger Pro, Anthem, the Psion 5, and Irlam's i16 sound sampler.
November issue on sale 30th September



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Curriculum Training Associates
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Tyldesley
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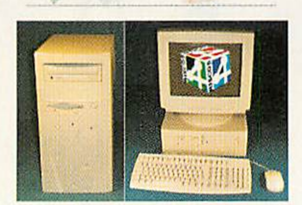
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RISC OS C++ compiler initiative

While RISC OS applications have often benefited from some superb hand-coded assembly language programming, the lack of an up-to-date industry standard C++ compiler for general application development has been a serious disadvantage for the RISC OS platform.

This problem could well be on the verge of being solved if a couple of initiatives see some success this year. Currently, RISC OS application programmers wishing to produce C code have to make do with the 'official' Norcroft compiler which uses CFront extensions to support a very limited sub-set of C++ features.

It's very out of date and has limited peripheral support in terms of templates and other critical specifications. There is a RISC OS port of the popular GNU C/C++ (GCC) compiler, but it is quite old and also only supports a limited set of C++ features.

RISCOS Ltd itself has made approaches to ARM Ltd to investigate the possibility of licensing the ARM SDK, which includes a native C++ compiler. In the past, Acorn has always stated that this was not absolutely necessary, though many suspected that the huge cost of licensing the SDK (software development kit) was the real reason behind Acorn's reluctance. RISCOS Ltd feel they have a better chance of negotiating a cheap deal with ARM Ltd. Time will tell if this hope will bear fruit. Other concerns include end-user cost and the lack of RISC OS desktop application tools for the ARM compiler, but RISCOS Ltd probably has the ability to fill in gaps like these over time.

Meanwhile, a collection of programming enthusiasts started a discussion on the comp.sys.acorn. programmer Internet newsgroup in July which has led to an independent initiative to port the latest version of the GCC compiler to RISC OS.

Nick Burett, who did a lot of the original work in porting GCC to RISC OS, offered to do the new porting job, but he no longer had a Risc PC to do the work.

Steffen Huber assumed the role of organiser and the GCC initiative was formed. Between 12th July, when the newsgroup discussion first started, and 2nd August – just three weeks – a number of people offered to donate funds towards sourcing a Risc PC for Nick, the machine was delivered and Nick duly produced early versions of the basic C++ compiler, Fortran compiler and associated libraries.

Indeed a 'beta' version of the compiler is now available for public download, although it is currently unsupported and Nick is keeping a low profile until more fundamental work on the compiler port is completed. There is work available for like-minded enthusiasts – among other things, documentation needs to be produced. If you want to help, e-mail Steffen at: steffen.huber@icongmbh.de

There were some concerns that RISCOS Ltd would be uninterested in seeing an independent GCC initiative launched, as it would distract from their ARM SDK efforts and potentially reduce sales of any resulting RISCOS Ltd solution. Happily, RISCOS Ltd has given the initiative its seal of approval.

If RISCOS Ltd is successful in its ARM Ltd efforts, the 'official' SDK will co-exist with the free GCC one, with commercial developers more likely to go for the RISCOS Ltd solution in order to benefit from official support and other advantages RISCOS Ltd could offer.

Although progress has been impressively fast to start with, Steffen points out that to revitalise interest in RISC OS software development, a modern compiler is only the first step.

The final step would be the availability of an integrated development environment with debugger, editor, a RISC OS class library and a GUI builder.

Some usable parts are already available, like a decent text editor (*StrongEd*, *Zap*), a source code control system (RCS, CVS) and various template editors (the first step to a GUI builder) like *WinEd* and *TemplEd*. Future tasks would include the porting of various Open Source utilities and even Sun's Java 2 platform. The GCC port will be free and hopefully it will spark renewed activity in the RISC OS application development arena.

If interest and activity is sustained, it could mark another crucial milestone in the stabilisation of RISC OS and the rest of what used to be the Acorn computer market.

For more information on the GCC project, see the Website at: http://www.arcsite.de/hp/gcc/index.html

New training schedule from Insight

Insight Training, the Cambridge-based IT training company, has released details of its 1999/2000 courses and dates.

Insight specialises in training for school staff and offers courses covering networks, key application packages, technical aspects and security matters.

The company offers courses for PC and Apple Mac users as well as Acorn RISC OS users. Courses for the latter include *Impression Style/Publisher, Ovation Pro, Eureka, ArtWorks, DataPower* and a technical exploration of RISC OS. In addition, they have a course on Acorn support and servicing. Insight Training can be contacted at tel: 01223 812 927 or via e-mail: insight@argonet.co.uk



Castle's smart new keyboard



Castle Technology has unveiled a smart new Aura keyboard for its range of Acorn computers. According to Castle, the new keyboard conforms to all international standards and has a much improved key action that is both tactile and quiet in operation.

This keyboard will be shipped with all new Risc PCs from now on and is available for all existing A7000, A7000+ and Risc PCs. Latest generation Acorns are compatible with PC keyboards, but these tend to be plastered with Microsoft Windows logos on dedicated menu keys. The Aura keyboard sports 'Acorn' menu keys instead, between each Alt key and the space bar and below the right-hand Shift key.

Extra software is supplied to allow the keyboard to fully emulate the mouse and also allow use of the Acorn menu keys. Other features include a removable wrist rest which can help some people avoid Repetitive Strain Injury (RSI). As it's removable, those not needing the extra support don't have to permanently give up valuable desk space.

The Aura keyboard also supports the new Euro currency symbol. This key allows the inclusion of the Euro symbol in documents when the computer is fitted with RISC OS 4. You will also notice there is an unusual position for Num, Caps and Scroll Lock lights, right at the top of the keyboard, centred for ease of viewing.

There is also an extra large space bar and full-size Return/Enter key. The new keyboard will be available from 1st September 1999 for all A7000, A7000+ and Risc PCs and can be ordered online or by calling 01728 723200.

The keyboard is priced at just £29+ delivery & VAT (£41.93 inc delivery and VAT). For further information contact: Jack Lillingston (Managing Director), tel: 01728 723200, fax: 01728 621179, e-mail: jack@castle.org.uk, Web: www.castle.org.uk

RISC OS 4 shipping info

In answer to many peoples queries RISCOS Ltd can confirm that shipments to end users have started with over 200 RISC OS 4 ROM sets having been programmed and despatched as of 10th August.

However they are experiencing two problems:

1. The current ROM sets are not suitable for all types of machines.

2. The availability of ROM's has been insufficient for our needs.

Consequently, RISCOS Ltd are reverting to using standard (masked) ROMs until supply of suitable FlashROM becomes available, which is not likely to be until November.

There will be a delay in the delivery of standard ROMs, and hence further orders will not be shipped until the middle of September.

RISCOS Ltd would like to assure users that these delays are purely down to supply problems with the ROM's and not due to problems with RISC OS 4 itself. Most importantly they should like to point out that the level of orders has exceeded expectations and would like to thank users for their patience, and their support of RISCOS Ltd.

RISC OS 4 is obtainable from Dealers and Authorised Installers or direct from RISCOS Ltd

The cost is £120 inc. VAT and P&P within the EU. Deliveries outside the EU cost £107.50 inc. P&P.

Orders can be placed via e-mail to ro4orders@riscos.co



Panasonic DVD developments

Panasonic is one of the prime movers in the field of DVD, pioneering the DVD RAM rewriteable format. The company has made two announcements recently. Firstly, Panasonic has announced that it has perfected the technology behind a new 9.4Gb DVD RAM drive. The current DVD RAM format offers a maximum of 5.2Gb per disc, or 2.6Gb per side. The new double density DVD RAM format offers 4.7Gb per side. This capacity now means that a full hour of DVD MPEG 2 video can be stored on each side of the disc, compared to just over half an hour per side on existing DVD RAM discs and a mere eight minutes on CD.

If you can live with lower quality MPEG 1, then each 4.7Gb side of the new DVD RAM format will store a staggering eight hours plus of video. The drive will retain compatibility with most existing CD and DVD standards, including music CD, CD-ROM, CDR/CD-RW (read-only) and 2.6/5.2Gb *DVD RAM discs* (both read and write). No prices have been revealed, but it is expected that drives offering the new extended capacity will start to ship early next year.



Meanwhile, Panasonic has announced its latest budget-priced DVD ROM drive, the DVD632 6x (DVD) 32x (CD ROM) unit. There are plenty of 6x DVD ROM drives on the market today, but Panasonic's is one of the few, so far, which incorporates support for reading 2.6Gb (per side) DVD RAM discs.

Two types of DVD RAM disc media are currently available, one in a sealed protective cartridge and the other in a cartridge which can be opened, enabling the enclosed disc to be removed and inserted into compatible tray-loading drives like the Panasonic DVD632.

The drive uses a standard IDE interface and should be compatible with the latest Acorn and other RISC OS hardware, though specialist suppliers will confirm compatibility and the need for any specialist drivers. Panasonic lists the DVD632 at £84.99 + VAT, but the drive is likely to be available for a fair bit less than that. Panasonic's information line is 0845 600 3535.

Parliamentary constituency information resource

British Parliamentary Constituencies is a CD-ROM aimed at people who have a general interest in politics, this includes students from A-level to post graduate research.

It comprises an interactive front-end which provides a profile of every British Parliamentary constituency (in the 1997 election), its MP, voting data and analysis, and statistical data on a wide range of social, economic, demographic and geographical issues. The CD-ROM was mastered using Risc PCs, but released in commercial form only in PC format.

Dr John Hurley of Learning Partners Publishers has contacted us with news that recent activity in the RISC OS market has prompted them to make the CD-ROM available to RISC OS users: "Given the renewed vigour in the RISC OS market, we thought it would be a shame to deny Acorn users the opportunity to purchase this reference resource. For a limited time only – until the end of November – we are offering to provide the full commercial package with an additional RISC OS reader – if you buy directly from us.

"We are required to charge the same as the bookshop price, but will throw in a free upgrade to version 2.0 which includes the outcomes of the Scottish Parliament and Welsh Assembly elections, and a constituency by constituency record of voting in the Euro elections, as well as some other improvements."

Dr Hurley adds that the CD-ROM was compiled by two very distinguished authors, Professor Ivor Crewe of Essex University and Tony Fox of University College Worcester. A notable feature of the CD-ROM is the inclusion of Tony Fox's research database which is being made available for the first time to students, journalists and local politicians. It is available in *DataPower*, *Excel* and *SPSS* formats.

British Parliamentary Constituencies on CD-ROM is priced £50 inc. VAT for the single user edition. Orders can be sent to Polemic Books, Suite 5 Marquis House, 2 North St, Winchcombe, GL54 5EY or you can e-mail polemic.books@argonet.co.uk





The future starts here . . .

Specifications

RISC OS 4
16 Mb EDO Memory
4 Mb Flash Memory
4.3Gb EIDE Hard Drive
40x Atapi EIDE CDROM

Onboard

4 x 32 bit PCI Slots
2 x High Speed IDE Port
2 x Serial Port
1 x 10 baseT Network
1 x Parallel Port
1 x Infrared Port
1 x PC Style Gameport
1 x Microphone Port
1 x Audio Line In Port
1 x Headphone Port
1 x PS2 Style Keyboard
1 x 3 Button PS2 Mouse
Midi In/Out/Through

Casing

Micro Desktop layout or
Tower configuration

Software

Full RISC OS 4 retail
pack as standard

DrawWorks Millennium
Fireworkz Professional
PipeDream 4.5
EasiWriter Professional

Ankh
Botkiller 2
Frak !

More titles yet to be
confirmed as well as an
extensive shareware
and demo collection

PCI Upgrades

(Available soon)

StrongARM Card
MultiProcessor SA Card
PC Card
32bit SCSI Card
100 baseT Network Card
MPEG Decode/Encode
ATA 66 IDE Card with
multi I/O expansion
USB Ports
Int. 56k & ISDN Modems
3DFX Voodoo GFX Card
Video Digitiser

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From £579 + VAT



For more information contact your local RISC OS
dealer or RiscStation on +44 (0) 1942 797777



USB goodies

With the recent news that Microdigital will soon be marketing an upgrade endowing USB (universal serial bus) capability on RISC OS users for the first time, we've been keeping an eye on newly announced USB products. Eicon Technology, a leading ISDN products manufacturer from Canada, has announced its Diva USB ISDN terminal adapter (TA).

The new DIVA USB

Eicon is not renowned for sexy-looking products, indeed its previous two external ISDN boxes were just that, boring grey boxes, but somebody at Eicon's marketing department obviously rebelled and the new DIVA USB is a remarkable vertically standing curved design and compact to boot.

Its small size makes it portable, which is ideal as the unit can draw all its power from the USB port of the host computer. No firm price was available at press time, though it's expected to cost in the region of £130.

Meanwhile, Elsa AG, the German computer peripherals company and Pace (PMC Consumer Electronics) have also announced their own USB ISDN terminal adapters aimed at home and small office users.

All of these products should be compatible with BT's Highway ISDN-like service. Eicon Technology, http://www.eicon.com
Elsa AG, http://www.elsa.com
Pace, http://www.pacecom.co.uk

Kosovo CD correction

There was one tiny mistake regarding how much is donated from each Kosovo Charity CD. As the cost is £6.75, from the cheque sales, Paul F. Johnson takes off 36p for P&P – this means 6.39p from each CD is given over to the charity. Those doing VISA sales deduct 2.5% from the amount donated (minus P&P).

I hope this clears up any confusion over how much of the money is going to Paul F. Johnson, and how much reaches the charities concerned.

Magnetic ink-jet labels

You can feed paper, card, transparencies and even sticky labels through an ink-jet printer, but what about magnetic labels? Now, even these are ink-jet compatible with the introduction of MagPaper from Anchor Magnets Ltd.

A member of the Kane Magnetics International Inc., Anchor says its parent company made the breakthrough of creating A4 sheets of magnetically backed paper just 0.2mm thick. The sheets can be ink-jet printed (but not laser printed), trimmed or guillotined just as you would and ordinary sheet of paper. Anchor Magnetics, tel: 0114 244 117

New PowerShot A50 Zoom from Canon

Last year, Canon launched one of the smallest digital still cameras yet, the PowerShot A5 which many nick-named the 'digital Ixus' after Canon's tiny Ixus APS format camera. Now Canon has announced the PowerShot A50, which has a native resolution of 1280x960 pixels and a zoom lens with the equivalent range of a 35mm SLR camera's 28-70mm zoom.

If you've used an early-generation digital camera you may have experienced the frustration of not being able to take another snap straight after having just taken one. Typically, digital cameras need to transfer the live image to the main non-volatile storage medium, like a SmartMedia card or a CompactFlash cartridge and this takes several seconds, locking the camera up for the duration. The new PowerShot A50 incorporates fast buffer memory, enabling a sequence of photos to be taken in quick succession.

Canon also supplies an optional rechargeable battery and waterproof casing suitable for depths of down to 3 metres. As the camera uses CompactFlash memory cartridges, the supplied 8Mb memory card – good enough for around 24 1280x960 images – can be replaced by a higher capacity cartridge of up to 48Mb from Canon and up to 100Mb plus from other suppliers.

Keen photographers are reassured by Canon that the PowerShot A50 retains a great deal of manual control over camera settings should this be required. The PowerShot A50 has a list price of £499 + VAT. Canon can be contacted at tel: 0121 680 8062 or see their Web site at http://www.canon.co.uk



Attention RISC OS 4 users

RISC OS 4 is supplied with a new entry level document editor called *Writer*. Produced by Icon Technology, of *EasiWriter* and *TechWriter* fame, *Writer* was specially commissioned by RISCOS Ltd to be included with RISC OS 4. *Writer* can handle graphics and it can also read *EasiWriter* documents and HTML files.

Icon Technology reports that since the product went to press it was noticed that importing *EasiWriter* documents resulted in deviations in line spacing. This is due to the fact that *EasiWriter* spaces in points whereas *Writer* uses one, one and a half and double line spacing.

A corrected version of *Writer*, v.1.02, is now available for free download from www. icontechnology.net/writer, but be warned – it will only work on RISC OS 4.0 or later. Icon Technology is also offering *Writer* users an upgrade path to the full *EasiWriter* package for £60 including VAT.

Free software modules from who?

Micro Librarian Systems (MLS) is not a name on the tips of everyone's tongues in the Acorn/RISC OS world, but MLS has been an Acorn software developer since the early eighties, developing library automation systems for first the BBC Micro, then RISC OS based machines. MLS is also an Acorn Registered Developer, and now a RISCOS Ltd Registered Developer, Authorised Installer and shareholder.

So their fame is small, but their credentials are certainly impressive. Why are we telling you this? MLS has developed some new RISC OS code which it would like to distribute to other software developers for use in their own applications – free of charge. MLS is offering a small collection of memory and database application support modules in beta form. Testing feedback is the only price MLS seeks.

MLS isn't making the modules freely available – only bona fide software developers will be supplied with the code. For more information, contact Rik at MLS, via e-mail: rik@microlib. demon.co.uk

Welcome, Simnett Junior

Simnett is a name familiar to many in the Acorn world. John Simnett originally set up an Acorn products distribution business back in the earlier days of Acorn's history.

Now his son, Tomislav, has set up an official Acorn dealership called Simnett Computer Services. Tomislav points out that his business is completely unconnected to his father's, apart from the name and the historical interest.

The new company has been set up to supply and support Risc PC, A7000+ and Network Computers as well as offer tuition and training and Website design services.

Tomislav seems rather sensitive about his family heritage and he is keen to hear of anyone who might be put off by his family name. Simnett Computer Services can be contacted at www.simnettcomp.freeserve.co.uk

All change at Circle

Circle Software's John Skingley, has announced that his company has, for personal reasons only, ceased trading. Circle Software is best known for the *Impact* database package.

In his statement he explains: "I regret this decision, which has been made for purely personal reasons, and has nothing to do with the demise of Acorn.

"In fact, I expect the RISC OS market to remain buoyant as RISC OS 4 becomes freely available, and pick up during the Autumn when several new machines will be launched. Upgrades to *Impact-3* v3.13 may still be obtained by returning master discs with £5 P&P, for a limited period.

"It is hoped that our products will be available from another source in the near future." He added that cheques for the above offer should be made out to him personally, not to Circle Software. John Skingley's e-mail address is: john@ circlesw.demon.co.uk

In brief

Fastest CDR drive yet?

Memtek Products, the company which markets Memorex and Dysan brand storage products, has announced what it claims is the fastest CD recorder drive with rewrite capabilities available in Europe.

The CD-RW6424 can read CD-ROMs at 24x speed and 'burn' CDs in CDR mode at 6x speed – making a 650Mb operation last just over ten minutes, a saving of over five minutes compared to a 4x writer.

In addition, the drive can write data in packet mode to a CD-RW disc at 4x speed (600K/second), making it adequately fast to be used as a slow 600Mb removable harddisc. The CD-RW6424 is priced £199 + VAT. Further information can be found at http://www.memorexlive.com

USB Correction

We got some arithmetic wrong in the recent story we published about the arrival of the USB (Universal Serial Bus) standard on the RISC OS scene. USB is a standard capable of a maximum of 10 megabits/ second data transmission.

That translates into 1.2 megabytes/second, not 128K bytes/second as the news item stated. In other words, USB is approximately 90 times faster than a typical fast conventional serial port at 115.2K bits/ second, a factor of ten faster than we originally stated.

Millennium bugs fixed

RISCOS Ltd is certainly demonstrating a sense of attention to detail. Acorn originally declared that RISC OS was Year 2000 compliant, but RISCOS Ltd has discovered that some minor changes need to be made to certain calls in RISC OS 4.0 if it is to meet BSI (British Standards Institute) requirements.

Details of the alterations are available from RISCOS Ltd and are mainly for the attention of programmers only.

He is the Web Man

He is a man with eight Acorns, a cat, a name that means Mouse of Shadows, a delectable (his words) wife called Charis and a 28" ponytail. Call him Adny, for he is the Musus Umbra. Since the days of the BBC Micro, he admits to being an avid Acorn enthusiast. He writes programs for Acorns and likes 'the command line'. He is the creator of *Webman*.

Webman is a simple but useful module to help maintain a Website by keeping a record of the remote contents and comparing it with the current contents of the local copy. Any differences are listed on screen and can be directed into a script file for *sFTP* (http://www.nocturnal.demon.co.uk/), a freeware FTP client which can automatically upload the changes for you.



To make things more friendly, Adny's command-line program has been given a Desktop front end by Kell Gatherer called *!WebMan*. Kell has amplified and simplified the procedure into a single drag-and-drop operation. Drop the local directory containing your Website into the *!WebMan* window, and a starting record of the files and date stamps is created.

Next time you modify any of the files, you can synchronise the remote site by repeating the process. You can pre-set the sequence of script commands required for *sFTP* to log on to the Website host and *!Webman* will add the details of files to be transferred. No more playing cat-and-mouse with Filer options.

Musus Umbra
http://www.argonet.co.uk/users/musus/index.htm

!WebMan
http://www.locationworks.com/kang/webman.spk

Entertaining Mr Slow

From the Web Man to the Net Man. Mark Daniel, known as The Mad Cow (ask him) is developing neat applications to interconnect a pair of Acorn computers. Mark's *Network Suite* sets up a PPP connection over a wired serial port link between two machines, enabling file and printer sharing between the machines at 115200bps.

Some important setup items aren't yet configurable, so the two linked machines have to be given special IP addresses, the names MrSlow and MrStrong, and possess serial ports that run at 115200bps.

Existing network applications may get thoroughly confused by all this, so don't try to mix them. Maybe we can guess which Acorn machines Mark owns?

To try it out, download Chris Poole's freeware *DeltaNet* FTP server from ftp://freenet.barnet.ac.uk/pub/Acorn/freenet/c.poole/DeltaNet-1.18.arc and Colin Granville's *FTPc* client application from http://www.c-granville.freeserve.co.uk. Justin Fletcher's *Lprd* Printer Server can be found at ftp://freenet.barnet.ac.uk/pub/Acorn/freenet/j.fletcher/ daemons/lprd101.zip.

You'll also need the latest Acorn *Internet* application and the Acorn *PPP* module, both of which can be found on the *Acorn User* 200 CD.

Mark's Help file explains how to set up the link, and shows the cross-over 9-pin serial cable connections he uses, or you could use a standard 9-way to 9-way 'Null-Modem' cable. *Network* also provides simple talk windows to chat with the computer-user at the other end of the cable.

Network
http://www.madsoft.freeserve.co.uk

In brief

Between the sheets

CSS Designer **allows easy creation and editing of Cascading Style Sheets, which are text files that define the appearance of different tags in the latest HTML usage. A pair of scrolling windows allow font, colour, text, box and classification properties of major tags to be set up.**

As used by author Geoff Young's Web design house, *solutions.web, CSS Design* can produce normal or optimised terse output.

CSSDesign
http://www.dyoungs.clara.net/software/

Yet more coasters?

America On Line Europe **has announced a competitor to *BT Clickfree* and Dixon's *Freeserve* in the form of *Netscape Online.***

This new subscription-free service is aimed at the business and professional market complementing their paid-for services *CompuServe* and *AOL UK*. 20Mb of free Webspace, local call access, unlimited e-mail addresses...yeah, yeah.

AOL say their target market segment for *Netscape Online* is more likely to be 'male, younger and single,' and 'comfortable putting together the features and functionality of their Internet experience...'. Sounds rather like the Acorn computer enthusiasts of not so long ago.

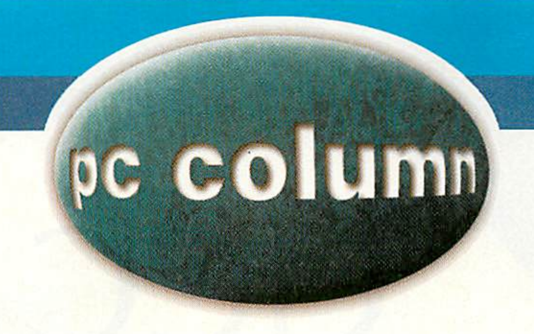
Netscape Online
http://www.aol.co.uk

Quicker Vista

The latest version of *QuickaVista* by Paul Skirrow of *Octopus Systems* offers a quick and powerful way to search the Internet using search engines and directories. Because there are few time-consuming graphics to download first, you can start typing in your search string straight away.

Keep a copy of the QuickaVista HTML page on your local harddisc for even faster access to Paul's favourite *Alta Vista, Yahoo, DejaNews, BT PhoneNetuk* and *Yellow Pages.* There's also a link to those hard-to-find *Demon Internet* query tools useful for checking Domain Names.

QuickaVista
http://www.octosys.co.uk/srch.html



Correction

Two months ago I answered a question from a reader and got the answer – at least partially – wrong. So I've promised to apologise. In fact I'll do better than that, I'll have a look at the solution! The question was about transferring *Impression* files to PC and then being able to work on them. I said I didn't know of a package that could do that.

Well I was right – and wrong. I still don't know of a package that can import an *Impression* file into a similar package on a PC. But I was wrong in that there is a way to export the material and rework it on a PC.

The answer is *EasiWriter Pro+* from Icon Technology. I'm also pleased to say it's a package that is not only available, but still very much supported. So how can it help you?

Well, *Easiwriter* has two functions which are, I believe, unique. It can read *Impression* files and reads and writes Microsoft *Word 6* files. So I gave it a little run, working first with *Word* documents. I'm glad to say I had absolutely no problems whatsoever. I thought I might run into font difficulties during the transfer. Luckily the Writer family handle this area as well.

In *Word* and RTF, documents fonts are referenced by name, so when *EasiWriter* imports such documents it needs to make sense of the fontnames which have been set up on non-Acorn platforms. To do this it uses a font mapping list. It will compare the names within the document to those held within the mapping list. If a font has the same name as an installed RISC OS font, it will use that. If not it chooses one of the standard Acorn fonts using extra information in the *Word* or RTF file.

For example:

- Times becomes Trinity.Medium
- Helvetica becomes Homerton.Medium
- Courier becomes Corpus.Medium
- Symbol becomes Sidney
- Monotype becomes Sorts Selwyn
- Arial becomes Homerton.Medium
- MS LineDraw becomes MDA1.Medium

Finally if no matching font is found, *EasiWriter* will use any available 'font family' information (for example, whether the font has serifs or not, whether it is has proportional spacing, and whether it is a symbol or technical font) to choose one of the standard Acorn fonts: Trinity, Homerton, Corpus, Sidney or Selwyn.

Text then is no problem. Graphics may be tricky though. Bitmaps in the newest version of *EasiWriter* are handled automatically. Other filetypes should work provided you have *ChangeFSI* loaded and the filetypes are known to it. If they aren't, going from *Word* to *EasiWriter* simply moves the graphic as an unknown grey box. Saving out as a *Word* file restores the graphic – if not perfect at least it means you can edit *Word* documents on your RISC OS hardware.

Impression docs are supported too now, but they're not quite as fluently handled. I'm told this is because *Impression* frames are not sufficiently structured to allow a simple drag and drop transfer; consequently you have to open up the document you want in *Impression*, select the text you want and save it as a 'text story'. This filetype can be loaded in to *EasiWriter*, retaining much of the formatting and style but losing the graphics. From there you can save them as *Word* documents which will then transfer to a PC or PC card.

Graphics will have to be handled separately and how you do that depends upon the graphic type. There are many utilities on the Web for graphic manipulation: now that HTML is so popular there is more need of them than ever. Having one or more of those alongside *ChangeFSI* will almost certainly sort out any manipulations you need to make. *Creator*, which can be downloaded from Argonet's Website is very versatile but there are others.

So, *Easiwriter* can help transport your documents into PC land. The thing is, it's yet another reason why you would not want to do it. I'm not going to pretend I've had time to get familiar with all its facilities yet – this isn't a 'proper' review and *EasiWriter* is a powerful piece of software. But just using it for a short while, scanning the manual and having the chance to appreciate its typical RISC OS easy interface, not to mention its range of facilities, it simply begs the question of why you would want to dump RISC OS for the hassles of PC land! Don't give in I say.

Icon Technology: 01778 59056

Handwritten fonts CD

If you like to use 'handwritten' fonts – say, for adding that little bit of extra something to letters in your documents, then this CD could be for you. It's easy enough to use on a PC card of course, but the real problem for us is how to get that copy into RISC OS in a useful format. One could do a quick and dirty import by grabbing a bit of the screen as a sprite. Crude – especially given the poor rendering quality of fonts on PC screens. Now, I can think of several ways to do it better, but what we really need is the ability to port a 'printed' output from the PC card to a sprite file. I'm thinking about that one. Maybe you have an idea?

Magnum Software,
Handwriting Fonts CD
E-mail: Fonts@magnum-software.com



GCC for RISC OS

One of the hotly debated topics on the Acorn Internet newsgroups – other than the ancestry of Dunstan's jokes – is the RISC OS programming environment, or lack of it.

Lack of decent C/C++ programming tools has been touted as the reason major Acorn developers, such as Sibelius, have deserted the Acorn platform. The existing C compiler produced by Acorn is hopelessly out of date and lacks the necessary program libraries to produce today's modern applications.

However, by the time you read this, major events should be well underway and hopefully new programmers will be joining the RISC OS fold. Why is this I hear you ask? Well, there seem to be two types of people in the Acorn world: those who complain about everything and those who actually do something to boost the RISC OS scene. German RISC OS fan Steffen Huber belongs in the second camp and decided to do something about the lack of a decent programming environment.

To this end, he decided to launch the GCC for RISC OS initiative, the target being to provide a working GNU C compiler for RISC OS, based upon the latest GCC sources.

There was a previous version of GCC ported to RISC OS by Nick Burrett, but this is now out of date – and Nick had sold his Acorn computer. Steffen came to the rescue and arranged for donations so Nick could have a Risc PC, to which he agreed to port the latest version.

Originally coordinated via e-mails on the Internet, the whole initiative is gaining momentum and looks like it will become a reality. Donations are still necessary to finance the purchase of the Risc PC, and Steffen is hoping that RISC OS programmers from around the world *will* rally to help.

Indeed, he's already received the blessing of RISCOS Ltd. They were let in on the idea early in its life because it was felt they *might* consider an independent initiative damaging to a project of their own. However, Andrew Rawnsley of RISCOS Ltd responded very positively and even proposed a low-cost bundle of GCC with several development tools like *ResEd* and the *Toolbox*.

It was also decided to make the compiler available free of charge. This would benefit enthusiasts and hobbyist developers who perhaps don't have the vast sums of money needed to buy commercial compilers.

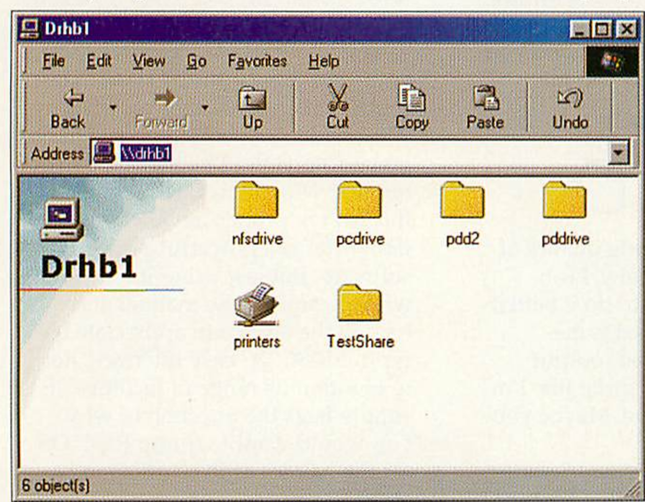
If you would like to help or become involved with the project visit their home page at http://www.arcsite.de/hp/gcc/index.html

Can you Samba?

One problem with connecting up Acorn computers to Windows or Linux computers is that file sharing only seems to go one way.

The commercial application *Omniclient* is available, through which you can access shared partitions and directories on remote computers. This works quite well and is easy to use. However, it's been virtually impossible to share a RISC OS directory or disc and access it from the foreign machines – until now that is. David Buxton has ported *Samba* 2.0.2 to RISC OS.

This started life as a Unix/Linux utility to share any filing system or directory path to a Windows machine as if they were using the Microsoft File Sharing Protocol. At present, *SmbServer* is only an alpha release for people to experiment with, although by the time you read this it will probably have reached maturity. The version I tried did not have any of the Netbios name protocol support.



Windows displaying RISC OS files

This effectively means that if you're not running a name server on your network you need to define the name of each machine, by editing the relevant 'hosts' files. The current version also only supports filenames up to eight characters – until recently the maximum for DOS usage.

Running it for the first time is just a case of editing a single internal configuration file and double-clicking on the *Samba* application itself. It then sits quietly on the iconbar waiting for you to access it from another machine.

You can now access your RISC OS discs from a Linux or Windows machine. In fact Windows will browse the RISC OS machine in much the same way that you *can* explore its local drive.

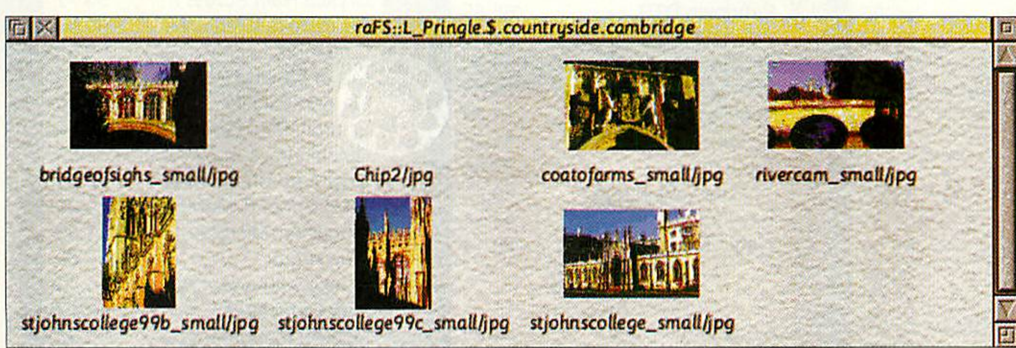
One big advantage of running *Samba* is that you can now print from the PC using a printer driver and printer attached to the Acorn machine.

This may be of benefit to schools or companies with PC machines but whose printer is connected up to an Acorn.

Samba is available to download from http://www.merddin.demon.co.uk

Give it a Thump

Thump is a real-time thumbnail viewer written by Rick Hudson, of *SoundCon* and *PlayIt* fame. It differs from other such utilities in that you don't need to store indexes of pre-defined thumbnails. Thump will generate them in real time via a standard directory display.



Filer display of my Cambridge photos directory

One immediate benefit of this is that you can browse your directories of images knowing that they are bang up to date and don't contain earlier versions that you've forgotten to remove from a thumbnail library.

You can even attach captions or descriptions and keywords to images. Simple searches can also be performed.

As usual with Rick's software virtually every aspect of *Thump* is configurable, with preference windows for thumbnails, viewer, full screen options, graphic formats and iconbar options. However, if you don't wish to tamper with the more advanced options, the default settings mean that you can start using the application 'out of the box' with no configuration whatsoever.

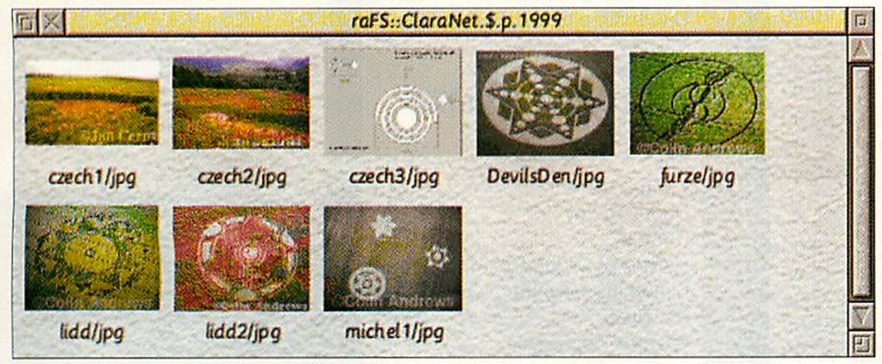
Windows can be moved around and controlled in a similar fashion to the standard filer displays that we are used to. Drag and drop is supported, as is simply double-clicking on an image to view it full size. Databases of images can be built up and stored for rapid access at a later date. The benefit of this is that you can rapidly scan for selected images or captions. One major advantage of *Thump* over other applications of this nature is its modular approach using 'Format Modules'.

These are plug-in modules for viewing image formats other than the default Sprite, JPEG and Draw formats. Several are already available, including ArtWorks, BMP, Clear, PCX and Targa.

Rick has also provided extensive documentation in the hope that other programmers will provide third party modules for other graphics formats.

A mailing list is also available at http://www.onelist.com/subscribe/riscos-thump for those who wish to discuss it in more detail or just keep up with release announcements.

Thump is freeware and available to download from http://members.xoom.com/_XOOM/rick_hudson/software/thump.html



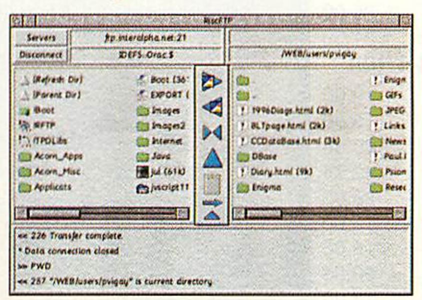
One of my 1999 crop circle image directories

RFTP

By the time you read this, a new FTP client should be available for RISC OS. At present there are two wimp FTP clients; the one that comes as part of the *Ant Suite* and *FTPc* by Colin Granville, plus there's a command line client; *sFTP* by Carol Carpenter.

RFTP is written by demo coder Graham Allen, aka Xira on IRC and from what I've seen of it, it looks pretty impressive so far. The user interface may change by the time you read this, and indeed I intend to return in a month or so to see how development is progressing.

Currently you are presented with two windows; One containing the source files on your harddisc or local copy of your Website and a second containing the remote files on the server. A comprehensive hotlist of server locations is a handy feature, allowing you to manage multiple server locations. Also a welcome feature is a console window, displaying a running commentary of what's going on behind the scenes. Unfortunately, at the time of writing you cannot type commands into this – but that may have changed by the time you read this.



Contacting AU

Paul Vigay:
pdpage@acornuser.co

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Revision 17



TechWriter demo

To accompany this month's main review we've included a demo copy of *TechWriter* on the cover disc. This supports all the functions of *TechWriter Pro* with the exception of the spelling checker and file saving commands.

You will need to move the fonts supplied into your *!Fonts* directory. If the program seems to be working slowly you most likely need to increase the size of your font cache.

Hopefully the inclusion of demo programs like this will help complement reviews, and enable you to better understand the reviewer's comments.

TopModel preview

With a review of the 3D package *TopModel2* in next month's magazine, and a *TopModel2* tutorial series starting in the Christmas issue, we thought we'd give you a glimpse of what the package can do.

The graphic below was created by Max Palmer in *TopModel2* and rendered in *Bryce* on the PC. Max will be guiding us through *TopModel2*, offering tutorials on its basic as well as its more complex features. This is a series well worth tuning in to if you've ever fancied a crack at 3D. Visit http://pages.inrete.it/sincronia/topmodel/ to find out more about *TopModel*.

Reader survey

It's been a long time since our last one (over two years in fact), so better late than never, we present this year's survey.

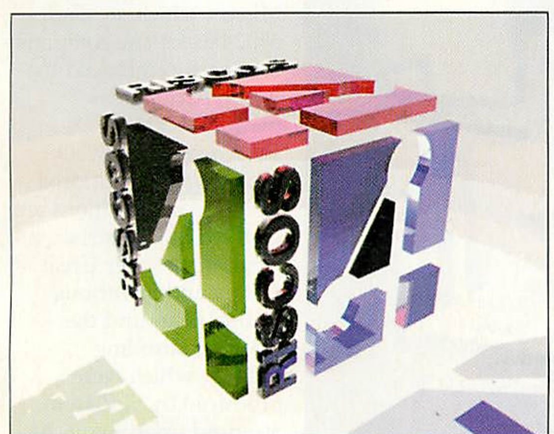
As usual, the survey comes to you in the form of the *Questor* software. Run it, flick through and answer as many of the questions as you can. You can save your progress at any time via the *Questor* menu, as an Ansor file.

Once you are certain you have completed the survey, save out your answers as described above. Copy the Ansor file onto a blank, formatted Acorn disc and post it back to Tau Press.

Alternatively, if you have an Internet connection, you can e-mail the Ansors file as an attachment, to surveys@acornuser.com

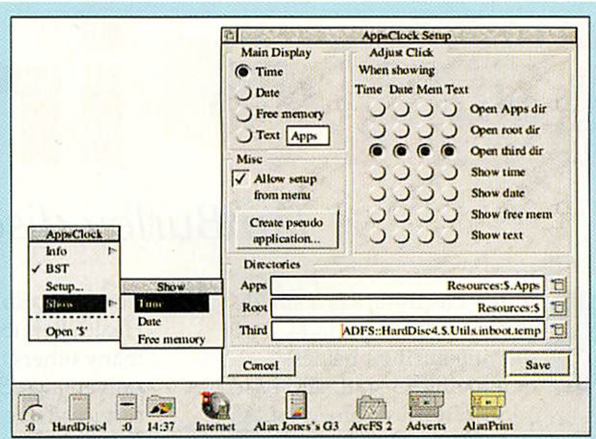
Copies of the survey are also available from our Website for download, at http://www.acornuser.com/

We look forward to receiving your feedback. Remember, every returned survey counts. And finally, thanks must go to Michael Rozdoba, for writing the program in the first place. Apart from some minor changes to the templates, the program has remained practically unchanged in five years.



Created in TopModel

AppsClock



This is a small utility by Andrew Booker which I've always found immensely useful.

At it's simplest level it replaces the word 'Apps' underneath the Apps icon on the iconbar with the current time, using only about 5K of the module area.

I'm currently using *AppsClock* to replace *PinFilter*, which doesn't seem to work under RISC OS 4. Like most computer users I create a lot of files during the course of work which need only be stored for a short period, say, when producing ideas for a Website. I also prefer to have a neat and tidy root directory, and the ability to open a temporary 'dumping ground' for files at a click of the mouse is a blessing.

Adjust-click on the apps directory brings up my temporary file store, Select-click opens the Apps window as normal, and Menu brings up a slightly extended Apps menu. See the Help file for full details on the extra options available.

This is a very useful little application that takes up no extra room on the iconbar, very little room in the memory, and saves my root directory from looking like a bomb site.

Disc information

The software on the cover disc has been compressed using *ArcFS 2* from VTi, and are opened by running a copy of *ArcFS* then double-clicking on the archive to open it. There is a copy of *ArcFS* on each disc. Most software will run straight from the archive, but some programs may need to be copied out of the archive before being run, uncompressing them in the process. Any program that saves a file to disc, for instance, will be unable to do so into the archives on the disc.

Faulty disc?

If your disc is faulty, test whether it will verify by clicking with Menu on the floppy drive icon and choosing Verify.

If it fails to verify or is physically damaged you should return it to Acorn User, Media House, Adlington Park, Macclesfield SK10 4NP.

The *Acorn User* cover discs have been checked for viruses using *Killer* version 3.001 from Pineapple Software.

Putting RISC OS into industry

Ian Burley discovers a new world

Si-Plan Electronics is a small technical research and manufacturing business, employing 25 staff, and based in historic Stratford-upon-Avon. As unremark-able as that may sound, we owe much to the company for its strategic part in the formation of RISCOS Ltd.

It's almost unique in establishing RISC OS-powered computing in industrial applications literally all over the world. Si-Plan has also developed its own peripheral hardware, some of which is available for sale to third parties, for real-world monitoring and control of systems using a RISC OS-compatible host computer.

Si-Plan was established by its present managing director, Bernard Bollons, back in 1977. It designs and manufactures custom electronically-controlled test and measurement equipment.

Si-Plan's list of customers is very impressive, including British Aerospace, Cadbury Ltd, Fisons Pharmaceuticals, Ford Motor Company, Rolls Royce, the National Health Service, 3M Health Care and many others, including top universities. Si-Plan's products and services have been exported to Belgium, Brazil, Canada, France, Germany, Italy, Korea, Saudi Arabia, Sweden, Thailand and the USA

Among Si-Plan's many areas of expertise is the ability to design their own electronic hardware, including embedded systems. Si-Plan extensively use RISC OS workstations, both as familiar stand-alone computers sitting next to the complex hardware they control and/or monitor and also installed in industrial casings. The company has also developed its own analogue-to-digital and digital-to-analogue (ADC DAC) converter and monitoring and control interface podule.

Meeting place

So, we've established the Acorn link, But Si-Plan is more than just another customer of Acorn technology and products. Stratford-upon-Avon and the Si-Plan office was the destination for a group of twenty-odd Acorn industry luminaries one October Saturday morning last year. This was at the height of the Acorn Phoebe crisis.

The topic was if and how the doomed Acorn Workstations division, or any of its constituent parts, could be salvaged. Bernard Bollons, Laurie van Someren, Peter Bondar and Paul Middleton, now managing director of RISCOS Ltd, were on the 'Phoenix' steering committee at the meeting.

Several more meetings would be held at the Si-Plan HQ during the following weeks to hammer out a strategy which would eventually be realised as RISCOS Ltd. Bernard Bollons would be fairly described by those attending these meetings as an important guide and influence to the discussion and also one of the few who, without hesitation, offered to stump up a large sum of money to set up RISCOS Ltd. So why was Bernard Bollons so keen to play host to these Acorn/RISC OS rescue meetings?

Si-Plan has used Acorn-related technologies in its products for a long time, starting with 8-bit 6502 processor based control devices in the early 1980s. A lot of development work was carried out using BBC Micros, which are also 6502-based. The company eventually embraced the Acorn Archimedes platform and subsequently, RISC OS.

A couple of hundred RISC OS workstations are secreted in industrial locations all over Great Britain and in various countries around the world, controlling systems which were produced by Si-Plan in Stratford upon Avon. As you can see, Bollons'



interest in the RISC OS platform is not simply philanthropic – his company's business depends on RISC OS.

Industial choice

Traditionally, RISC OS has had mixed fortunes in the big bad world of personal computing. Anything which isn't PC Wintel-compatible, Acorn and Apple included, is difficult to sell and the task has become harder as time goes by, no matter how strong the argument is on merit. However, this has not always been the case with Si-Plan's industrial customers; their priority is to have something which does the job required. Many industrial electronic control systems have completely proprietary user interfaces anyway.

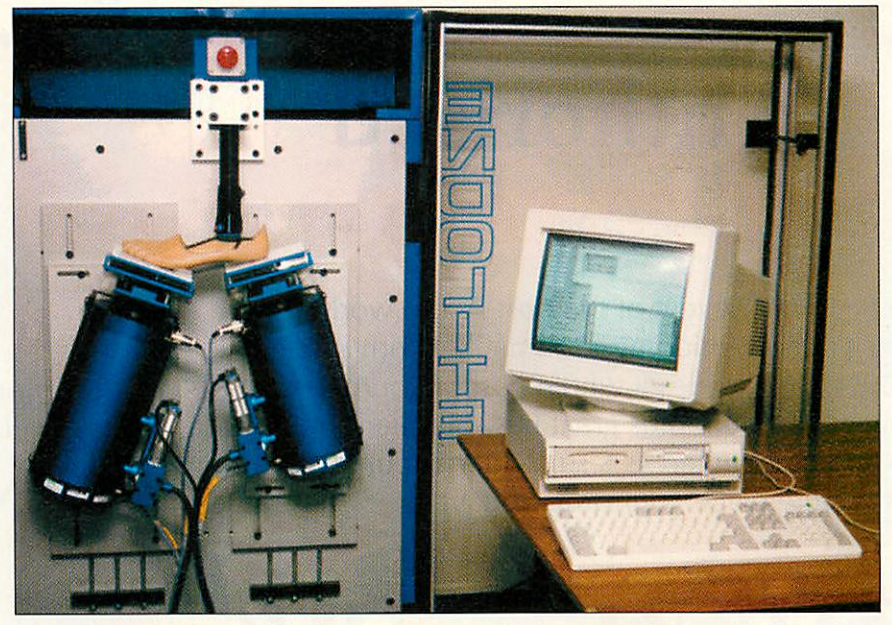
Trevor Bollons reflected the fact that a few of his customers have insisted on PC-based systems or have been reluctant to take on a RISC OS-based system. On the positive side he adds that in the majority of cases customers new to RISC OS have adapted to it enthusiastically and of those customers who were originally supplied PC-based systems, several have since accepted RISC OS-based upgrades.

Primary reasons for the enthusiasm Si-Plan has for Acorn hardware and RISC OS include ruggedness and longevity – reliability is a critical attribute in industrial applications. The operating life of the systems Si-Plan manufactures is expected to be many times that of a typical PC. The fact that an original Archimedes from 1987 will still work today and can be easily adapted to accept the latest version of RISC OS is of great value to Si-Plan.

The last thing they want is to have to make unscheduled service visits to customers whose businesses are losing thousands of pounds an hour because of a technical fault. In Si-Plan's experience, PCs are not nearly as rugged in either hardware or software.

Si-Plan are also very enthusiastic about the ease of program-mability that RISC OS affords. It's also easy for them to design their own podule cards and write software to support them. The dynamic nature of RISC OS also lends itself for multiple window, real-time monitoring displays using great-looking fonts. Often, Si-Plan use large screens in high resolution modes to allow monitoring of up to a dozen windows without causing the operator eye strain.

Their in-house designed ADC DAC family of interface and



control/monitoring cards reflects Si-Plan's commitment to RISC OS. This technology is rather reminiscent of the old BBC Micro's User Port and analogue-to-digital ports, but on a much more professional scale. For instance, the accompanying box connector card has no less than 50 terminals. The ADC DAC interface card can be connected to external equipment like transducers, load cells and thermocouples.

The basic ADC DAC podule has 16 analogue input channels, a pair of output channels and 16 digital channels. Each of these can be software-designated as an input or an output channel. If you need more than 16 channels, add-on cards are available to multiply the number of available channels up to a maximum of 64. Add-on cards come in three flavours, 16 digital input channels, 16 digital output channels, or 8 of each. The cards are optically isolated to prevent power surge damage to the host computer. While Si-Plan developed the ADC DAC card family for their own use, they are able to supply the cards to customers who have their own custom applications if required.

False feet

If you take a tour of the Si-Plan unit, there are Risc PCs and A7000s all over the place. Next to each you are likely to find a fascinating item of electro-mechanical hardware. For example, Si-Plan are well established in the field of producing test equipment for artificial limbs. An artificial foot testing rig was in the showroom when we last visited, for example. Nearby was an artificial breathing machine designed to test breathing apparatus for the aerospace industry. A stainless steel bellows is powered by Si-Plan pneumatic actuators and controlled by a Risc PC.

In conjunction with an appropriate transducer, which Si-Plan can also make, the Risc PC can record a real person's breathing profile. This profile can then be edited and used to control the bellows to simulate a real breathing person. Other test rigs Si-Plan has built to order in the past include a steering column test rig and a brake test rig for the automotive industry and a rig for testing inhalers used by asthmatics.

It's not to say that without Si-Plan, RISCOS Ltd might never have happened. However, it's interesting to note that the company, which hardly anyone had heard of until the end of last year, became such an important catalyst for the formation of RISCOS Ltd. It also serves to remind us that RISC OS and its associated hardware is not just an enthusiast's hobby horse or a classroom workhorse. Si-Plan runs a successful specialist business, much of which is built around RISC OS, in the demanding sphere of industrial test and control systems. Si-Plan isn't unique, either – look at companies like Millipede Electronic Graphics, for example. However, that's another story... END

Contacting them

Company:	Si-Plan Electronics Research Ltd, Avenue Farm Industrial Estate, Stratford-upon-Avon, CV37 0HR
Tel:	01789 205849
Fax:	01789 415550
E-mail:	enquiries@si-plan.demon.co.uk
Web:	http://www.si-plan.demon.co.uk

HTMLPro **update**

Levens Software have released their latest version of *HTMLPro*, their OvationPro-to-HTML conversion application (reviewed in the May issue of *Acorn User*). This latest incarnation (v1.40) addresses some of the problems in previous releases and introduces some useful new features.

The main overhaul is that you no longer have to produce table-laden HTML (although with-tables output is still the default). This results in 'nicer' HTML, and produces text that is not laid out exactly as it appears in *OvationPro* – the text will be wrapped by a browser to the window width so that the reader can see it. This ability to save without tables also means that it is possible to transfer 'text with effects' to other word-processing programs, such as Microsoft *Word*, using HTML. However, don't expect fonts and sizes to be transferred correctly; *Word* does not convert HTML entities (such as smart quotes) correctly either.

The other major improvements have been to the HTMLinks applet for *OvationPro*. This now doesn't insert the links directly into a document but stores them until they are converted. A small extra step is needed before importing into *HTMLPro* because of this, but it does prevent your text being filled up with small markers. Also, the applet can now tell you whether your cursor is in a linked piece of text and what the link is, and even take you to a specified link in the document.

There are still improvements that could usefully be made (the interface is cluttered and a little confusing, the configuration doesn't seem to save when told to, and it's still not possible to add your own tags to the text by hand before conversion) but *HTMLPro* is evolving into a competent HTML-conversion package.

Now that the text is no longer forced into tables and the applet has been improved, this is now a worthwhile addition for those contemplating converting *OvationPro* documents for the Web, and even for creating simple Webpages. Levens software, tel: 0500 121 242.

John Pettigrew

Philips 107S **17in monitor**

Monitors have seen a dramatic price tumble recently. Among low end 17in models, the Philips 107S stands out as a known brand. Its specification of 70KHz maximum line frequency and 0.28mm dot pitch are barely passable for a 17in, but adequate and on a par with anything else in this price range.

My demands were for 1024x768 at 85Hz. I find 1280x1024 a bit of a strain even on the best 17in monitor, while 85Hz is a noticeable improvement over 75Hz, and about the best my Risc PC can manage at this resolution due to timing problems.

Out of the box the 107S is a little bulky and old-fashioned looking, having particularly wide bevels at the sides of the screen. It requires less than 1A continuous, so it can be run from the Risc PC's mains out socket, and it has full DPMS support. The warranty is one year on site with a further 2 years' return to base.

As for the picture: the quality is a little grainy, but sharp and consistent across the whole screen with no noticeable blurring or distortion near the edges. Its size holds constant rather than growing or shrinking as the monitor warms up. The graininess can be reduced by applying vertical Moire, but this introduces an unpleasant shimmering before it achieves a significant effect on the graininess. Also, down the right-hand edge at 800x600 resolution with a high refresh rate, there is a distinct shimmering Moire pattern on a plain grey background that I can't get rid of with the controls.

The settings are accessed through the usual on-screen display, with buttons for quick access to brightness and contrast, a menu button, and a thumbwheel for adjusting the currently selected setting and for navigating the menus. This is less than ideal for navigation, but the whole system is comprehensive and reasonably convenient to use.

I quickly put together a monitor definition file from the VESA templates supplied with *MakeModes* and some customised modes for games from my old MDFs. It took a bit of tweaking before I could define an 85Hz 1024x768 that both the monitor and my Risc PC were entirely happy with, but it only took a couple of attempts.

In conclusion, I can't recommend the Philips 107S if you want a high quality monitor, but you can't expect that at this price. If all you want to do is use 1024x768 comfortably this monitor's specification is well matched with Risc PCs and is excellent value.

Tony Houghton

Product details

Product:	Philips 107S 17" monitor
Price:	£180.85 inc. VAT (carriage free if ordered online)
Supplier:	Simply, 2/3 Forest Works, Forest Road, Walthamstow, London E17 6JF
Tel:	0870 727 4020
Fax:	0870 727 4002
Web:	www.simply.co.uk

Flat out

Chris Drage reviews four Flat Panel Displays

Last month I looked at the benefits of Flat Panel Displays (FPDs) over traditional Cathode Ray Tube (CRT) monitors. This month I'll be reviewing four FPDs, ranging from the budget Iiyama to the rather lovely Apple Studio Display. This review was set to include one of Silicon Graphics' wonderful monitors, unfortunately the connections won't allow their displays to be driven from an Acorn. A pity as they do produce some wonderful kit.

Trident Displays

Trident Displays build Rugged Display Products and Industrial Monitors. They use components from some of the very big players in this field – Hitachi for example.

You may appear to be paying more for a Trident display but there is a clear advantage when it comes to support, quality and longevity of the product. Buying cheaply can often mean a one-off price for a one-off production run with limited support, if any at all. It's best to buy from established manufacturers like Trident who have been in the business for years.

The Trident range of displays have the option of being bolted to the desk or wall on a swivel bracket, and also have a lockable CPU cradle: these are desirable security features in high risk areas. The range comes in a black, white or wood-effect case, with an optional protective window.

The 14.1in Mirage 610AV displays 1024x768 pixels which means it supports VGA, SVGA, and XGA resolutions, making it suitable for RISC OS machines. Plus its PAL input is versatile enough to double as a video monitor for your camcorder or video viewing/editing. It did not take my eleven-year-old long to discover it also has a PAL video socket and displayed his PlayStation superbly (at which point I lost the use of it for review purposes).

The first impression you get is of the brightness of this FPD compared with a CRT monitor. Similarly, the contrast is immaculate. Blacks are truly black! The review monitor came in an attractive and robust cream case with a set of six buttons on the front, below the LCD display. These are 'menu', 'move up', 'move down', '+', '-', and the ON/OFF switch.

The on-screen menu offers a range of nine separate settings affecting the display: horizontal position, vertical position, back light, brightness, contrast, hue, tint, load values, source selection. Selecting and setting the controls is very simple and precise. For a start



Product details

Product:	Standard Phantom (12in), no protective window, deskstand, either black or white
Price:	£455 + VAT
Product:	Standard Mirage (14in)
Price:	£698 + VAT
Product:	Standard Silhouette (15in)
Price:	£797 + VAT
Add-on:	AV/Playstation input add
Price:	£25 + VAT
Supplier:	Trident Displays Ltd., Perrywood Business Park, Honeycrock Lane, Salfords, Redhill, Surrey, RH1 5JQ
Tel:	01737 780790
Fax:	01737 771908
E-mail:	sales@trident-uk.co.uk

the Mirage detects the type of signal it is receiving and adjusts automatically to display it. The only adjustments *you* ever need make are to alter the brightness, contrast and backlight. The monitor sits on a stable stand which allows it to tilt at up to 45 degrees from the vertical.

The Mirage worked with everything I threw at it including PC laptops. I only had trouble with my ageing Risc PC which tried to get VIDC20 to read the VRAM too fast: 1024x768 in 32,000 colours at 75Hz was expecting too much of the system and the Mirage would not display anything. I suspect that the number of upgrades I have in that machine (2 SIMMs, StrongARM, PC card, SCSI and an Eagle video board), caused the timing problems. However, the Mirage worked perfectly with my A7000+ in all its modes.

Overall, the Mirage 610AV is a no-nonsense, sturdy FPD which does its job extremely well. It is bright, easy to use and rugged. It is an ideal candidate for classroom applications.

Iiyama Pro Lite 36a FPD

It's about six months now since my 17in Iiyama monitor exploded in the living room. After a short period of raving about build quality my anger turned to joy as I realised I could then justify getting a flat screen. Come on! This was a dream come true for a gadget freak like me.

My enthusiasm evaporated however when I saw the prices. We're talking serious cash here, and I was forced to steal a 14in CRT from one of my other Risc PCs.

Thankfully my tiny-monitor nightmare is now temporarily at an end. Castle Technology were kind enough to lend me a 36cm (14.1in diagonal) colour LCD screen, which you may have seen at one of the Acorn shows.

Unpacking and getting started is a doddle, it's just like any other monitor. The power lead and signal lead are of a decent length, allowing computer and monitor to be separated if needs be. Being an LCD it's also of sufficiently low power to let you run it directly from the RPC's power-out socket.

It has three main on-screen menus, and all provide pretty detailed control over their respective areas. You're even given a choice between English, German, French, and Dutch displays.

A word of warning though, the manual does make several important points about using and handling your monitor. It states 'Perform adjustments after a warm-up period of at least thirty minutes'.

Now, I normally ignore stuff like that. In fact, I wouldn't even have read the manual if I wasn't reviewing it – after all, it's only a monitor, how complicated can it be?

Well, do read the manual. When this monitor arrived it was very cold to the touch, consequently the screen was so bright and pale that it made my eyes water for the first hour or two – very off-putting.

The manual also states that it should be run at a resolution of 1024x768 and not below, this is because the picture is stretched to fit the screen. If I now swop over to 800x600...terrible. The whole screen looks like an over-stretched sprite...I'll have to change back.

This can be a pain if you want to work in 16 million colours and don't have the necessary VRAM for larger resolutions. However, if you're feeling adventurous you might be able to use MakeModes to stick large borders on an 800x600 16M display, thus defeating this 'stretching' problem.

My biggest complaint is that the useful viewing angle is rather small. If you move your head the screen darkens and lightens in various places. This got progressively better, but for the first week or so I was cursing this little monitor. It made me cry and squint, and I could only use one screen mode. My dream was ruined.

However, over time I got used to its little quirks. I'm not quite as bothered by the small viewing angle, and as I only use 1024x768, the resolution issue doesn't affect me. It takes up less room on my desk, I can pick it up and turn it



Product details

Product:	Iiyama Pro Lite 36a FPD
Price:	£599 + VAT
Supplier:	Castle Technology
Tel:	01728 723 200
Fax:	0800 783 9638
E-mail:	sales@castle.org.uk

around to show other people what's on screen, plus I can slip it in a bag and take it home with minimum fuss.

So, what's the verdict? Well, I wouldn't really want my big CRT monitor back, but at the same time I'd prefer a better flat screen. At £599 + VAT this is only £208 cheaper than the fabulous Apple Studio Display. If such monitors were in my price range I'm afraid I'd be skimping and saving for that extra cash.

Mitsubishi 15in LXA530W

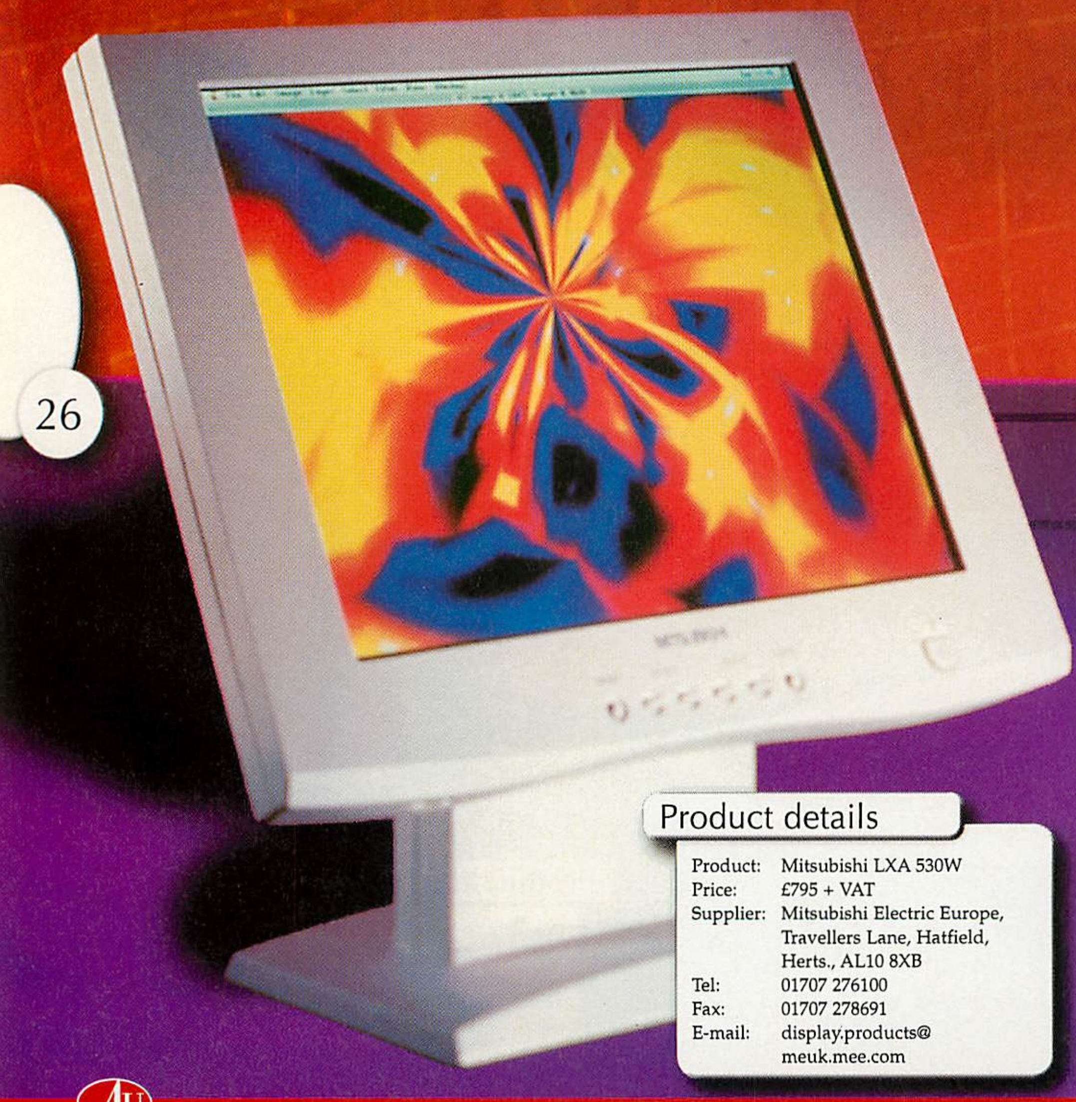
Mitsubishi's elegant 15in LXA530W monitor features excellent image quality and, with a depth of 160mm, this slim, space-saving display occupies only 40% of the desk space used by the average 17in CRT monitor. In addition, it weighs only 6kg – compare that with the mass of a 17in CRT. The LXA530A features a maximum resolution of 1024x768 (XGA) and has a viewing angle of 140 degrees. This model also features a user-friendly on-screen adjustment panel and conforms to all the latest environmental and safety standards including Energy Star, TCO 95, MPR-II and VESA.

The on-screen display features: contrast, brightness, black level, v-position, h-position, clock, clock phase and OSD-position. While the easy to find front display controls (manual) offer: power SW (micro-processor control), select (up/down), adjust (RGB-gain colour adjustment), reset, mode and rotary encoder.

If this sounds complicated, be assured that setting this monitor up and getting it working took barely seconds and the only adjustments required were to the brightness, black level and contrast.

In use the image quality of the LXA530A proves ideal for multimedia applications, as its advanced TFT LCD screen delivers clear, sharp images that are stable and easy on the eye, free of distortion and blurring. With its multiscanning support, it can display modes common to most computers (1024x768, 640x480 or 800x600). The on-screen display lets you quickly and easily adjust screen size, screen position, distortion and colour. At less than 45 watts, the Mitsubishi consumes less than 37% of the power used by a comparable CRT monitor, reducing monitor-related energy costs by more than half.

Mitsubishi back their displays with a three-year parts and labour warranty, on-site swap-out during the first year (UK mainland only) and two years return-to-base. Overall this is a stylish FPD with an excellent performance. The downside? It doesn't have any video inputs – my camcorder would look stunning on this one!



Product details

Product:	Mitsubishi LXA 530W
Price:	£795 + VAT
Supplier:	Mitsubishi Electric Europe, Travellers Lane, Hatfield, Herts., AL10 8XB
Tel:	01707 276100
Fax:	01707 278691
E-mail:	display.products@meuk.mee.com

Apple studio display

Although the new Apple Studio Displays are designed to complement their new G3 Mac, they will grace any computer system on any desk. In typical Apple-ergonomic fashion, this range of monitors are elegant and stylish to say the least. Their advanced ColourSync screen technology means images are brighter and crisper, colours more vivid, the text sharper and easier to read. We've included the price of the 17 and 21in CRT monitors that come with this range as well.

These Apple monitors offer an unmatched combination of 'smart' features and superior software user controls. Smart scaling, provides full-screen, high-quality viewing of graphics and video at varying resolutions. Each monitor ensures the best possible performance regardless of display/graphics card or analog input from the computer, through accurate, easy phase adjustment.

I reviewed the Studio Display 15in FPD which is ideal for home, business, and education users. It's twice as bright as typical, equivalent CRT-based displays. Your eyes immediately appreciate that. It's also easy to adjust for tilt and height. Your neck will *certainly* appreciate that. It's state-of-the-art digital imaging coupled with superb software controls, results in an extraordinary flexible, responsive monitor.

It's TFT, active-matrix technology delivers crisp, clear images that are twice as bright and sharp as those of typical CRT-based displays and

completely eliminates screen flicker. Displaying full-screen video is a stunning experience thanks to built-in composite and S-video connectors and audio input connectors.

Its wide (120 degree horizontal) viewing angle makes group viewing easy, which could be important for many schools. It displays up to 1024x768 pixels which means it supports VGA, SVGA, XGA resolutions making it suitable for Acorn computers. Its PAL input makes is an ideal video monitor for your camcorder or video player.

Easy access to software controls and four USB ports make this monitor simple to use. The menu offers offer a comprehensive hardware and software controls:

- Power on/off
- Graphics/video toggle
- Brightness
- Reset
- On-screen display navigation
  - Menu position (vertical, horizontal)
  - Information (display status)
  - Language
  - Function adjustment
  - Menu off
- On-screen display functions
  - Tracking (coarse, fine)
  - Position (vertical, horizontal)
  - Black level
  - Sharpness
  - White point

The Apple Studio Display is very environmentally friendly, complying with strict global TC0 95 standards for low power consumption, low emissions and recyclability. And lastly, just to add that little bit of Apple *je ne sais quoi*, there's even room to stow your keyboard under the display. A thorough-bred among FPDs!

Conclusions

So which is the pick of the bunch? No one monitor came head and shoulders above the others in this survey in terms of overall quality. With the exception of the Iiyama they are all very good indeed. At this level TFT LCD screens represent consistency in quality of display. What will probably sway your decision are other factors like design, control features, whether the FPD has a video input included, and so on.

As far as the four models reviewed here are concerned, the Mirage represents style, robustness and a no-nonsense approach that you would expect from a company like Trident Displays with their background of supplying industry. The office staff at John Kelly Girls' Technology College were very, very reluctant to give up the Trident display I asked them to trial.

Apple on the other hand in its inimitable fashion has delivered an excellent FPD with all the style and flair you would expect from them. It not only complements an Apple G3 particularly well but a Risc PC equally! It has enough bells and whistles to keep the most discerning users happy.

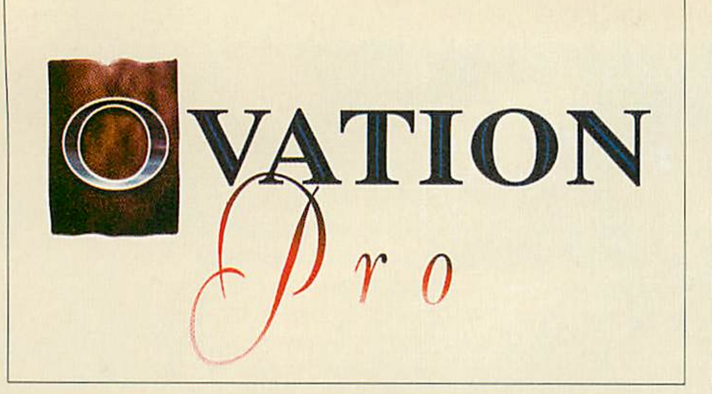
The Mitsubishi provides excellent performance but without the video input. Lastly the Iiyama offers a cheap alternative to it's bigger cousins – it offers the size and weight benefits of FPDs, but fails to deliver the quality of display one would hope for.

Before buying it is worth checking that the particular manufacturer offers extra inputs either as standard or as optional extras. A video input is a must. You won't believe what your camcorder recordings look like until you see them on a TFT, LCD panel. **END**



Product details

Product:	M6356ZM/B Apple Studio Display 15in FPD
Price:	£807.08 + VAT
Product:	M6221ZM/A Apple Studio Display 17in CRT
Price:	£292.90 + VAT
Product:	M6204ZM/A Apple Studio Display 21in CRT with ColorSync
Price:	£862.17 + VAT
Supplier:	Apple Xemplar Education, 2 Furzeground Way, Stockley Park East, Uxbridge, Middlesex, UB11 1BB
Tel:	0181 218 1500



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6.5Gb Seagate	2	£99.87
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An IDE interface suitable for most of the above drives can be purchased for only £29.37 when bought with one of the above drives. Larger units (>500Mb) may require partitioning software when used on pre-RISC PC machines. Please phone for details. A mounting bracket is an additional £1.76. Example price: 40Mb Seagate with interface and mounting bracket £42.88.

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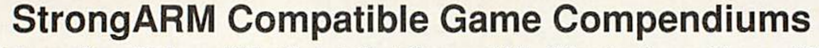


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Keeping control

Part seven of Michael Cowgill's series on MIDI controllers

This month we are looking at Channel Mode Messages, which provide global control of your synth or sound module: I have listed them in Table I together with their data bytes for you to look at.

The first two messages were not defined in the original MIDI 1.0 specification, being added as part of the General MIDI recommendations in 1991, all GM devices are required to recognise them.

Silence is golden

The main use of the *All Sounds Off* controller is as a panic button; when you have umpteen stuck notes blaring away on your sound module, and don't want to lose your Sys Ex settings by using a GM or XG reset, sending an *All Sounds Off* message on all channels will silence the racket, the envelopes being reduced to zero as soon as possible.

I often use the *Reset All Controllers* message as part of the initialisation bar of sequences, as it returns a key number of controllers to the default state, however it should be used with care, as not all controllers may be reset (for instance XG devices don't reset filter and envelope controllers), so check your manufacturer's documentation before use. GM devices reset controllers as follows:

- Pitch bend is centred
- Channel pressure is zeroed
- Modulation is zeroed
- Expression is set to maximum (data value of 127)
- Sustain is set to Off (data value of 0)
- RPN is set to Null

The *Local Control* message is only relevant to MIDI devices with keyboards, and determines whether the keyboard controls the internal sounds or not. The usual reason for switching local control off is a phenomenon known as MIDI Echo, which sometimes occurs when you have the device connected to a computer – playing a note on the keyboard plays the internal sound generator, sends a *Note On* message through MIDI Out into the computer where (if a software MIDI Thru is enabled) it is copied to MIDI In and is played a second time, though a fraction of a second later.

Most MIDI software now allows you to disable a software MIDI Thru, thus eliminating the problem, but switching off local control can also be useful when you want to hear the sounds from the computer's point of view – there may be a difference in the patch selected for a particular track for example. Obviously devices without keyboards do not respond to this message.

All Notes Off is similar to the *All Sounds Off* controller mentioned earlier, except that sounds are allowed to complete their assigned envelope. The last four controllers are associated with the four MIDI Operation Modes listed in Table II. You will need to consult your manufacturer's documentation about the way your device responds to these as they vary, but XG devices do not recognise operation modes 1 or 2, and treat controllers 124 and 125 as *All Notes Off* messages.

Operation modes

A word about the Operation Modes themselves: The term Omni refers to the ability of the device's sound generators to respond to more than one channel at once. In other words all MIDI messages are sent to all sound generators on the device, no matter which channel they have been assigned to. This is why modern multi-timbral devices like the Sound Canvas or the DB50XG will only recognise Modes 3 and 4 where Omni is set to off. If Omni could be set to on, the cacophony would be unimaginable.

Mode 1	Omni On/Poly
Mode 2	Omni On/Mono
Mode 3	Omni Off/Poly
Mode 4	Omni Off/Mono

Table I: MIDI Operation Modes

No.	Description	Data
120	All Sound Off	0
121	Reset All Controllers	0
122	Local Control	0
123	All Notes Off	0
124	Omni Off	0
125	Omni On	0
126	Mono On	0-16
127	Poly On	0

Table II: Channel Mode Messages

Mono and Poly (Monophonic and Polyphonic), refer to the potential number of notes the synth can play at once. Those of you who read my article on Portamento may remember that I advised them to set parts using portamento to a monophonic setting, and you may also find it expedient to set parts to Mono when programming instruments like trombones, or clarinets, which can only play one note at once.

Well, that's me done. Perhaps you will hear from me in a future MIDI related series. Until then: Happy music-making!

END

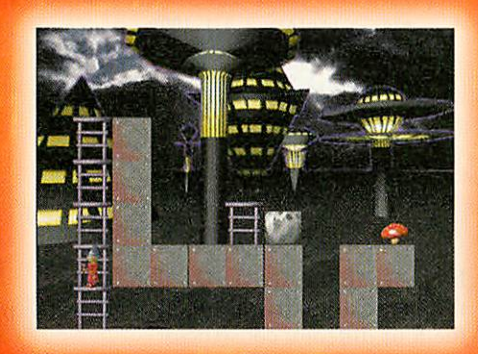
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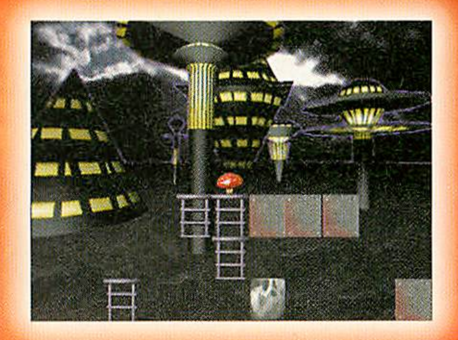
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1. In which Disney film does a *Wizards Apprentice* section (starring Mickey Mouse) feature?

   A. Fantasia
   B. Dumbo
   C. The Lion King

2. Which classic game by Orlando was released for the Risc PC last year?

   A. Zalaga
   B. Arcadians
   C. Frak

3. What was the first game for the BBC Micro?

   A. Snapper
   B. Ankh
   C. Exodus

When you have a complete set of answers, fill in the relevant boxes (or send a letter) to *Wiz App* Competition, *Acorn User*, Media House, Adlington Park Macclesfield SK10 4NP.

The prize will be drawn on 1st December 1999, and the Editors decision is final. Nobody associated with Fantasia Software, APDL or *Acorn User* may enter this competition. A full list of prize winners will be available upon receipt of a stamped addressed envelope to the editorial address.

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Objects of desire

Greg Scott extends his knowledge of polymorphism

This month we'll see how arrays of objects are treated in C++. The mysteries of Virtual Functions and Polymorphism are also uncovered. The quest continues:

In C++, it is both possible and practical to have arrays of objects. The syntax for handling object arrays is very similar to any other type of variable. Consider this simple example, which uses a ten-element array of classes:

```
class basic
{
int index;
public:
void idx_set(int a) { index=a; }
// sets index var.
int idx_show() { return index; }
// returns it.
};
main()
{
  basic arr[10];
  int x,y;
  for(y=0,x=9; x>=0; x-,y++)
    arr[y].idx_set(x); // set
classes as 9,8,...
  for(x=0; x<10; x++)

printf("%d\n",arr[x].idx_show());
}
```

The program lists the numbers 9,8,7... 0 on the screen. We can see from the code that standard forms of indexing are used for arrays of classes. More complicated circumstances arise when using arrays and class constructor functions.

Arguments for class arrays

Consider the two following class definitions and associated array declarations:

```
class easy
{
  int a;
  public:
  easy(int x) { a=x; }
};
class hard
{
  int a,b,c;
  public:
  hard(int x,int y,int z) { a=x;
b=y; c=z; }
};
main()
{
  easy a_one[4]={3,4,1,100};
  hard a_two[4]={
    hard(3,1,1),
    hard(1,0,2),
    hard(242,21,2),
    hard(0,0,0)
    };
};
```

In this example, the declaration of the easy class is trivial – we specify the four different constructor parameters (one for each element of the array, 0 to 3) using the usual array-initialisation syntax. However, because the hard class takes three parameters, a longer initialisation system has to be used. One argument cases can also adopt the use of this syntax, though the shorthand method is preferred.

Cases may arise where constructor initialisation of an object is unnecessary. However, to simply omit parameters in the declaration will lead to a compile-time error. A clever solution is to overload the constructor function with a parameterless version. Here is an example:

```
class misc
{
  int a,b;
  public:
  misc(int x,int y) { a=x; b=y; }
  misc() { a=b=0; } // overload
constructor
};
main()
{
  misc one[3]={
    misc(0,0),
    misc(1,0),
    misc(0,1) };
  misc two[100]; // uses
overloaded version
};
```

Pointers to classes

A pointer to a class behaves just like a pointer to other types of variable. To access members of a class given a pointer to it, we use the '->' operator in place of the standard dot operator. The next excerpt shows how to access class members using pointer referencing:

```
class my_class
{
  int a;
  public:
  int b;
  set_a(int x) { a=x; }
};
main()
```

	before variable	after variable
increment syntax	operator++()	operator++(int x)
decrement syntax	operator--()	operator--(int x)

Prefix (before) and Postfix (after) Overloading

```
{
my_class x;
my_class *point; // pointer to
'my_class'
point=&x;         // point to 'x'
point->set_a(5); // access function
point->b=0;       // access public
variable
point->a=7;       // error, access
private variable
}
```

The pointer to the class x is defined in the normal way. Similarly, the '&' operator is used to provide the address of the object. Notice how both member methods (functions) and properties are accessed using the '->' operator. The last line of the program gives a compile time error because a is a private member of my_class.

Just as we can increment pointers to move through an array of, say, integers, we can use an object pointer to access elements of a class array. This month's first example could be re-written to use pointer indexing:

```
  basic arr[10],*poi;
  int x;

  poi=arr;          // assign
&arr[0]
  for(x=9; x>=0; x-)
  {
    poi->idx_set(x); // set
classes as 9,8,...
    poi++;          // next
class
  }

  poi=arr;          // re-assign
&arr[0]
  for(x=0; x<10; x++)
  {
    printf("%d\n",(poi)-
>idx_show());
    poi++;
  }
```

C++ has type-checking facilities which restricts a pointer of one type from pointing to an object of another type. The one exception is that a base class pointer can to point to any object derived from that base. This is not true the other way around – a pointer of a derived type may not point to an object of its base type.

Lastly, a base class pointer can only access members of a derived class which originally belonged to that base.

The *this* pointer

No, not that pointer, *this* pointer! Seriously, there is indeed a special instance of an object pointer called the *this* pointer, and (as we shall see) the boffins at ANSI couldn't have chosen a more appropriate name.

When a member function is called, the *this* pointer is automatically passed to the function, implicitly.

It points to the actual instance of the object which called the member function. To understand the use of *this*, consider the following class that returns the integer average of three numbers:

```
class av
{
int a,b,c;
public:
av(int x,int y,int z){ a=x; b=y;
c=z; }
calc_av() { int d; d=(a+b+c)/3;
return d; }
};
main()
{
av one(5,6,12);
printf("average is
%d\n",one.calc_av());
}
```

Within the class functions, members can be accessed directly, with no need for additional referencing. The statement:

```
c=z;
```

Literally means that the variable c belonging to the object that invoked the function will be assigned the value of z. Using the *this* pointer, the same expression can be written differently:

```
this->c=z;
```

So, in the program above, the *this* pointer points to the copy of the object called one; The entire av() function could be written using this expanded notation, but it isn't needed.

Operator overloading

Introduced last month, operator overloading lets us re-write the behaviour of almost all C++'s operators (+,-,.,--, and so on). Let us look at how *this* can be used in overloading the '++' unary operator:

```
class twin
{
int va,vb;
public:
twin(int x=0) { va=vb=x;}
show() { printf("%d %d\n",va,vb); }
twin operator++() { this->va++;
this->vb++; }
};
main()
{
twin s(5);
s.show();
++s;
s.show();
++s;
s.show();
}
```

Although there is no need for the expanded use of this in our example, it does help illustrate the effect of the operator overload. A better application of the *this* pointer is in overloading the assignment operator. An example program (file 'eg7') can be found on the cover disc.

In the example above we've only overloaded the prefix form of the increment operator, but how do we distinguish between the prefix and postfix versions? Fortunately, C++ gives us two different forms of the overload syntax in this case, which are illustrated in Figure I. The value of the x variable will be zero – it is used purely as a 'marker' to distinguish between the two functions.

Friend style

You can overload an operator using a *friend* function (covered last month). Because a *friend* function is not a member of a class, it doesn't get passed a *this* pointer. Therefore, an overloaded *friend* operator is passed all operands explicitly. Here is an example:

```
class obj
{
int a,b;
public:
obj(int x,int y) { a=x; b=y;}
obj() {a=b=0;}
show() { printf("%d %d\n",a,b); }
friend obj operator+(obj one,obj
two);
// include friend declaration
};
obj operator+(obj one,obj two)
// friend defined outside class
{
obj temp;
temp.a=one.a+two.a;
temp.b=one.b+two.b;
return temp;
}
main()
{
obj three(3,3);
obj four(4,4);
three.show();
four.show();
```

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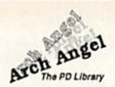
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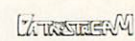
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```
three=three+four;
three.show();
}
```

Friend functions can also be used to overload the increment and decrement operators, although a different syntax must be used. Usually, the overloaded versions of these two operators will change the operand that invoked the function. However, because there is no *this* pointer for a friend function to use, we need another way to alter the actual values of the parameters passed.

Astute readers will recall something called a reference (covered in part two), which is the perfect solution for the job. By specifying a parameter as a reference (preceding its declaration with a '&'), any changes made to it inside the function affect the actual operand that generated the call.

Let's see how a (prefix) friend operator++() function could be defined in this way:

```
obj operator++(obj &var)
{
var.a++;
var.b++;
return var;
}
```

Remembering the marker system used to distinguish between the post and prefix versions of '++' and '--', a postfix function prototype would need to specify the marker as a second parameter:

```
obj operator++(obj &var,int x);
```

Polymorphism

Overloaded functions and operators allow multiple methods to be controlled by a single, common interface.

This is an example of compile-time polymorphism, or 'early binding' (that is, all information required to make a call is known at compile time). Run-time polymorphism (or 'late binding') is achieved using virtual functions.

A virtual function is declared as virtual in a base class and redefined by derived class. To declare a function as virtual, we precede its declaration with the *virtual* keyword. The redefinition of the function in the derived class completely overrides the initial base definition.

A virtual function acts like a set of guidelines, providing the basis of an interface and allowing the redefinition of the virtual function by a derived class to implement specific methods.

When accessed in the usual way, virtual functions behave just as any other member function. Run-time polymorphism can only be accomplished because of the behaviour of virtual functions when accessed via a pointer.

As we've already seen this month, a base class pointer can point to any class type derived from that base. The magic of virtual functions is that the version of the function to be called is based upon the type of object pointed to by the pointer. Let's see an example:

```
class b
{
public:
virtual void f()
 { printf("base class
function.\n"); }
};
class d1 : public b
{
public:
void f()
 { printf("derived class 1
function.\n"); }
};
class d2 : public b
{
public:
void f()
 { printf("derived class 2
function.\n"); }
};
main()
{
b *poi,one;
d1 two;
d2 three;
poi=&one;
poi->f(); // call base f()
poi=&two;
poi->f(); // call d1 f()
poi=&three;
poi->f(); // call d2 f()
}
```

The output from this program is:

```
base class function.
derived class 1 function.
derived class 2 function.
```

This output shows how the correct version of **f()** has been called in each case. The virtual **f()** function is declared in the base class using the virtual keyword (it can be omitted from subsequent redefinitions). The pointer **poi** is a base class pointer, and as such is allowed to point to all derived class types.

The virtual property of a function itself is inherited, so when a derived class acts as a base to a further derivation, virtual functions can still be redefined. If a virtual function is not redefined by a derived class definition, the base class version is used. Here is an example:

```
class b
{
public:
virtual void f()
 { printf("base class
function.\n"); }
};
class d1 : public b
{
public:
void f()
 { printf("derived class 1
function.\n"); }
};
class d2 : public d1
{
public:
// no redefinition of f()
};
main()
{
b *poi,one;
d1 two;
d2 three;
poi=&one;
poi->f(); // call base f()
poi=&two;
poi->f(); // call d1 f()
poi=&three;
poi->f(); // call d2 f(), using d1
f()
}
```

The output from this example is:

```
base class function.
derived class 1 function.
derived class 1 function.
```

Because there was no redefinition of **f()** in the **d2** class declaration, the closest "relative" was used. In this case it was the version belonging to **d1** (from which **d2** was derived).

Next month

Next month we'll continue with polymorphism and virtual functions, and pay a lot more attention to our Matrices project (which we haven't really had time for this month). END

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Right royal click up

Walter Briggs looks at the art of cut-and-paste

A few months ago there was such a furore in the press at the royal wedding of Prince Edward and Sophie Rhys-Jones, you'd think there'd been a royal beheading. The reason for the commotion in the newspapers was that the royal photographer had the audacity to digitally replace Prince William's rather sullen expression with a more cheerful one from another shot, just to create the perfect picture. 'What right had the photographer to alter what the camera had captured?' The 'right', was the fact that both poses actually existed; all the photographer had done was to substitute one for the other.

Now, the moral of the story is not for me to comment on, but the principle of what the photographer did is the subject of this article.

The ability to alter, rearrange, or digitally modify a photograph is a great boon, not only to photographers, but to anyone with a photo album. Simon Anthony has been showing how to do this with basic RISC OS tools, we'll look at using the professional software.

There are so many reasons to want to change a photograph. As we will see in this article, you might



Figure I: The offending Uncle Joe and the Bride and Groom



Figure II: Au revoir Uncle Joe


Figure III: Alone at last

want to remove someone, combine two images into one, or simply change the location. Most of the technique is limited to 'cut and paste', though the use of masks and the advantage of layers makes life a lot simpler.

Relative removal

Take for example the first set of photographs: we find that Uncle Joe (Figure I) has now departed the family, and so the happy couple have decided to remove him from the wedding album. In this case the easiest option is to cut around the unwanted Uncle, and remove him from the scene (Figure II).

Once Uncle Joe had departed, the foliage behind the couple needed to be rearranged. This was to a large degree another case of cut and paste, with a little cloning thrown in. Since the foliage behind the group was so dark, it wasn't difficult to cut out a few leaves and stick them in the vacant space.

The path and garden needed a little more work, so one of the stones from the edge of the path was cut out, resized and dropped into the garden at the edge of the crazy paving. With a little blending, a little soft smudging and a dash of airbrushing the paving was extended to fill the deserted spot. Et viola! The bride and groom now stand alone (Figure III). This is the simplest form of altering a photograph, and probably the most common, but let us try something just a little more challenging.

Little Miss Muffet

The original photograph used in our next mission was of the bride bending down (Figure IV); this was to be part of an arrangement for the first page of the photograph album, with the bride in this pose at the top, the groom reaching up from below.

Unfortunately the photographer forgot how he had arranged the bride, and so when later examining the various shots, he found the groom in exactly the same pose as his new wife!

Nevertheless, this image was salted away until I discovered it and decided it was an ideal subject for this article. The original concept was interesting and the pose rather unique; all it needed was a reason for 'being' – and the magical addition of a little bridesmaid seemed to do the trick. This time we're not just removing individuals from a scene, we are relocating them to a new one.


Figure V: Using a mask to cut out the young lady


Figure IV: Oops, she's dropped something

The photograph of the children sitting together was an interesting composition in its own right (Figure V). We just borrowed one to enhance the 'stooping bride' image.

As with the earlier composition, the child had to be cut out of the background very carefully by hand using the cutting tool. But this time more care was needed, since she was to appear in another production. I find that the best way to cut out anything complicated is to use a mask: this allows you to see exactly what will be removed (Figure V). With packages like *Studio 24* or *Photodesk* the eight-bit masks can be retained on their own channel.


Figure VI: Our little bridesmaid pasted onto the new picture

This means that, at any time in the future, they can be altered or re-used. This can be a bonus if, like me, you spend an age cutting round something, only to be distracted, then find you've lost all your work with the 'scissors'. You can cut out your object and add it to the clipboard, from where it can easily be retrieved at a later date, but masks are more versatile.

Another point to remember with smooth subjects like people is that an anti-aliased edge round your figure will allow it to blend more naturally into its new background, so an eight-bit mask is a great advantage. If you are using a cutting tool choose an anti-aliased edge if possible, unless you are cutting out something with a hard edge, like a car.

It's possible to use the magic wand to cut out objects, but with a complicated background of similar tones the wand will grab sections you don't want, so, although it can take an age, I find doing it by hand gives me more control – yet it is still possible to miss details, as in this instance – part of the foliage above and to the left of the child's head was also cut out. In this case it didn't matter since the hedge was very similar.

Once the tiny bridesmaid was removed it was a very simple

operation to resize her and sit her at the feet of the bride (Figure VI). I kept the pole, along with some of the foliage since it was very similar. There is a slight difference in the colour of the dresses, but since I wasn't sure if this was a difference in the photography or in the dress material, I left well enough alone!

Beef-eating in London

Now it's time to move on to another stage – this time our example needed its background altered before the transplant could take place.

This shot of a young girl posing with a Beefeater in a courtyard at the Tower of London is not particularly inspiring, but no doubt a valued keepsake (Figure VII). All we need to do is transfer the Beefeater and victim to a more interesting location.

The main subjects were masked and carefully removed, having an 'anti-aliased edge'. Their new position outside the Tower walls was already occupied so a little digital surgery was needed.

The youngster to be transferred was one of the two smaller figures in the foreground, but the two individuals lurking alongside would need to be removed.

It wasn't too difficult to remove the two unwanted bodies and, since the youngsters would be covered by our new arrivals, they were left in place. The ivy walls were easy to clone, and we were soon rid of the men beneath a swathe of red leaves. The fencing was also duplicated with the clone brush, simply mimicking the features on the left.

It was vital that the clone brush was kept level with the details it was copying, otherwise the fence could run out of line. The rust-coloured ivy leaves grew in a random pattern just as nature intended, and so small sections were cloned from different areas of the wall.

As expected there was no need to remove the two youngsters since our Beefeater and partner adequately covered them. As in all cases you must consider the lighting; for example, it would be incongruous to have your background lit from the right, and your subjects from the left. In this case the scene is being lit from the left in both photographs, though the intensity does vary. Nevertheless, the result is a much more pleasing composition, with the castle in the background adding interest (Figure IX).

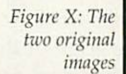


Figure X: The two original images



Face-2-Face

Now for something a little more tricky. Instead of simply replanting someone into another scene, let's see what can be done to alter the features of a single subject within a photograph. The original pair of images were two action shots, but in neither was the expression 'just right'. In the upper one only the bride was drinking, while in the lower one the groom was drinking but the bride had her eyes closed (Figure X). So it was case of mixing the drinkers.

Being confident that it would be easier to use the face in the upper photograph, I decided the first thing to do was to see if the face of the bride could be adjusted to fit her posture in the photograph below without too much contortion.

Low and behold, once resized slightly, the bride was a perfect fit.

Because she's looking down in the lower photograph, there would need to be some re-working of the bride's face. At this point I must make it absolutely clear that in no way am I referring to the lovely features of the bride, but only to the angle of her head. One advantage of working with layers is



Figure VII: The original image

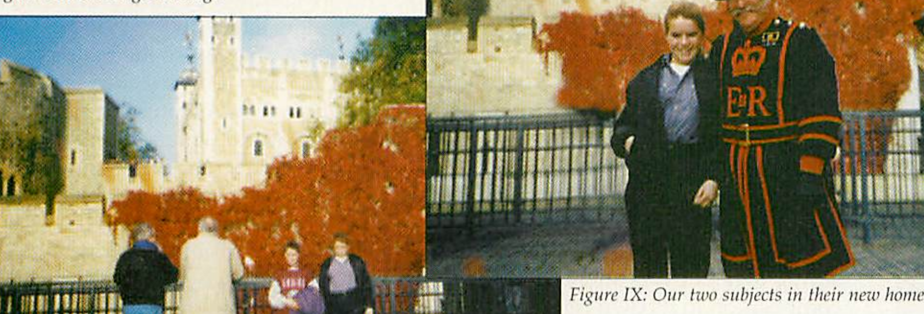
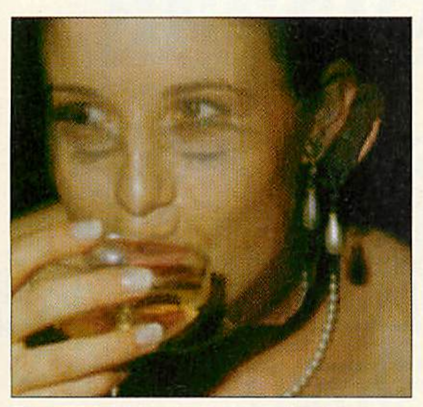


Figure IX: Our two subjects in their new home

Figure VIII: The original background


Figure XI: Lowering the opacity to align layers

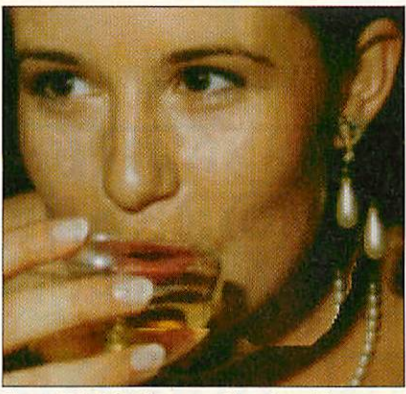

Figure XII: A few features still need touching up


Figure XIII: The finished face - bellissima!

the ability to lower the opacity of any given layer, making it possible to very accurately line up a number of images. This meant I could at least align the drinking hand (Figure XI).

I can see this description getting me into a lot of trouble! Still, the transposition of her beautiful features works very well (Figure XII), with only the neck, earring and shoulder needing to be 'touched up'. Ouch! I should have stayed in the Tower! It was at this point I realised that I should have been working on the groom instead, if only so I could produce a pleasing description.

There was a little work to do on the glass and on the shadow beneath her chin, but fortunately the fingers and shoulder lined up very closely. The chin was masked and the shadow expanded to cover the neck. It wasn't too difficult to airbrush out the shadow of the earring and clone part of the necklace (Figure XIII).

Since the background was dark, it was easy to gently smudge the hotel details around the bride's head, until they merged with the rest of the decor. Strangely apt, to have a beheaded bride just after working at the Tower of London! At any rate the composition turned out rather well, with the bride and groom drinking in tandem (Figure XIV).

Cut 'n' paste paradise

The wedding couple from the 'Relative Removal' section Figure III were now ready for the final – and perhaps obvious – transportation for a newly married couple: a honeymoon in the Caribbean. Of course this was easier said than done. The light was so strong in the tropical garden that I had to place the couple beneath the traditional coconut palm and plaster them with shadows of palm fronds.

This involved the generous use of layers. In *Photodesk* it's possible to have lots of masked features on separate layers, from which a single composition can be built up. Figure XV shows the numerous 'palm leaves and footsteps in the sand' on different layers and, though only a few are shown here, their number grew to eight at one point. I also needed to cut out the small sand bank and place a copy in front of the bride's dress since it didn't quite look right.


Figure XIV: Eyes wide open. Much better

As explained earlier, each layer can have its opacity altered independently, until the shadow has just the right intensity. I randomly and crudely cut out a few branches and dropped them onto separate layers. They needed distorting a little to fit the contours of the dress, but they help to establish the couple on the tropical isle. Once more the exercise was basically cut and paste; in this case from back garden to tropical paradise.

Given the large number of images needed to demonstrate the process, I have not had time to really finish any of them off. Even so, I hope it will inspire you to change your family history. END

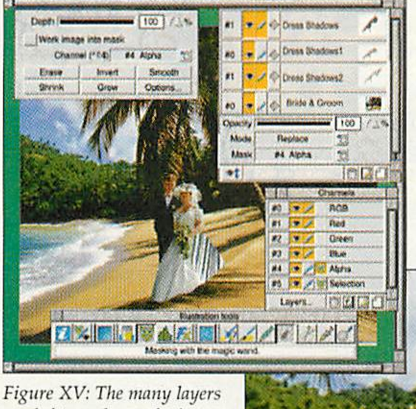


Figure XV: The many layers needed to make up the image


Figure XVI: A cheap way to have a Caribbean holiday, care of Mr Briggs' magic brush







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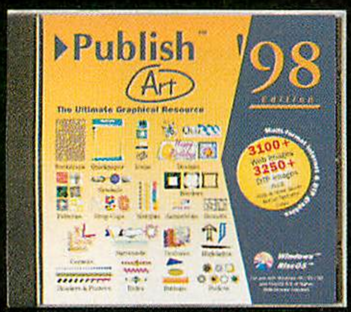
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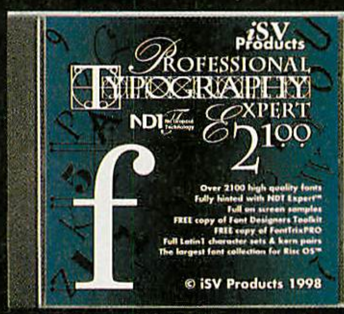
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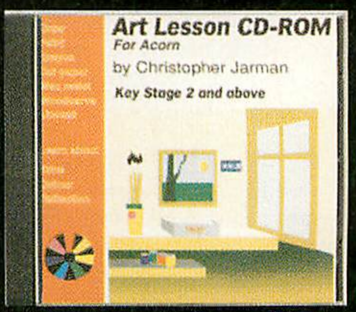
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The waiting game

Alasdair Bailey twiddles his gaming thumbs

Sadly, we appear to be stuck in some sort of void between game releases at the present time. Things are still happening behind the scenes but it's just a matter of waiting patiently to see what the finished products are like.

Quake

Andrew Rawnsley of R-Comp has finally taken the plunge and effectively bypassed TBA Software by announcing plans to release a tidied up version of the freeware *ArcQuake* at a knocked down price of just £25. Martin Piper of TBA Software was writing the *Quake* engine for the RISC OS platform



but unfortunately, due to work pressures, the project just kept on missing release dates.

No firm release date has been given for the R-Comp product but Andrew has promised me a preview as soon as my StrongARM upgrade arrives, so keep reading these pages!

Overcast

Overcast is a new freeware game from Andrew Weston. The game lacks the finesse of some of the more recent freeware releases but it doesn't cost anything, so we can hardly complain, now can we? There should be a full release version on Andrew's Website by the time you read this at: http://www.argonet.co.uk/users/awestern/

Inka

Another small, but hopefully playable game comes in the form of *Inka*, a top-down puzzler. Ivan Nedrehagen, the author, is currently looking at smartening up the graphics a little, prior to a shareware release around the time you read this. Once again, keep reading these pages to find out how to get hold of this little gem once released.

New hardware

Many of you will remember that the ill-fated Pheobe Risc PC II computer was to have included a PCI bus (PCI is the most common PC standard for internal expansion cards). In the months leading up to its release date, there was much talk of the possibility of using off-the-shelf PC graphics cards in the new machine, to boost performance in such areas as display resolution and, more importantly, smoothing and texture mapping for use in games.

In theory, such cards would work if suitable driver software were written and games modified to take advantage of protocols such as 3DFX and Voodoo 2/3.

The RiscStation 7500, which was previewed in the August issue, is also set to include a PCI interface. Ardent gamers will be glad to hear that RiscStation are planning drivers to support the use of leading brand graphics cards in the machine. If all goes well, drivers and cards should be available shortly after the release of the machine. Provided support for the cards is included in future games, this development could well put the RiscStation at the top of any games player's shopping list.

The Millipede Risc PC motherboard upgrade which is now due for release in the spring of 2000 is also good news for gamers.

Although the upgrade is not set to include support for PCI due to the limitations of the existing Risc PC case, the severe bottlenecks which the StrongARM processor encounters in existing hardware should be removed, allowing for almost Phoebe-like performance.

It's certainly worth keeping an eye on the new hardware developments. There is even talk of reviving some of those games that never quite made it to release day.

Guess the Game

I was rather disappointed by the small number of correct Guess the Game contest entries. I obviously made the screenshots in the July issue too hard for your lowly minds to comprehend.

Nevertheless, the three lucky winners of copies of *Shovy 3D* were (in no particular order) David Llewellyn-Jones, Ian Campbell and Theodore Rimspoke. Copies of *Shovy 3D* are on their way as we speak; the rest of you will just have to burn up in the hot summer sun. END

Contacting me

You can contact Alasdair by e-mail at games@acornuser.com or using traditional methods via the usual editorial address.

Versati

Jim Lesurf and the art of word processing

Wordprocessors are generally regarded as being fairly humble beasties. Useful, but not exactly something to get excited about. This may be true for most of them, but not *TechWriter*.

To a large extent, the features a wordprocessor will offer are fairly predictable. It will allow you to type and format text, to alter the font size, colour and so on. It will provide the usual text editing features such as cut and paste, drag and drop. It will also allow the user to add graphics and adjust the appearance of the page.

So if you haven't ever tried *TechWriter* or *EasiWriter*, the first thing you might want to know is: "What does it do that I might not expect of a wordprocessor?". If you already use a version of *TechWriter* or *EasiWriter*, the question is more likely to be: "Is it worth my while to upgrade?"

Icon Technology provides a family of applications with differing facilities. This means you can choose the version that suits your needs, and upgrade later for the difference in cost if you wish. In this review I will specify *TechWriter*, but most of the things I write will also apply to *EasiWriter*.

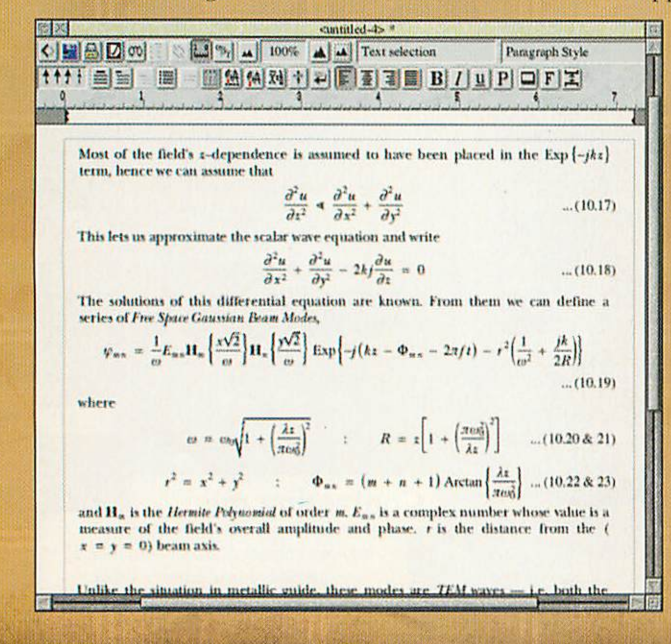
When describing the features of the newer 'Pro+' versions I'll refer to them both as Pro+. *TechWriter* and *EasiWriter* actually offer a large range of facilities, hence it is impossible to cover them all in a review. I will therefore be selective and just try to mention enough of the right things to give a clear picture.

OK, first things first. What features of *TechWriter* are unusual? Why is it an application that many people find impressive? The answers to these questions are rooted in the way it works. *TechWriter* isn't a 'frame based' application, instead, you define the structure of a document in terms of paragraphs, sections, chapters, lists and so on.

Each of these also has a style – a set of properties which you can set, some of which can be 'inherited' by other structures which sit inside them. This gives documents a logical consistency and means that the final form flows from the content. It also means reformatting a document to change its appearance is easy.

This structural approach may seem complex, but in practice it isn't. Everything is handled for you automatically – for example: lists of items can auto-number themselves as you type them. Hence the details of 'structures and styles' can be ignored completely if you wish.

For authors, rather than graphic designers, this approach is ideal. It means you can simply get on with writing, drawing diagrams, and so forth, and the appearance of the result adjusts to suit what you do. This makes creative work almost effortless. For authors, *TechWriter* is a dream to use.



Usually, the structural relationships will follow the same patterns – paragraphs in sections, sections in chapters, and so on. The various structures can then be worked on, and behave as you would expect given their logical relationships. However, at times it is possible to obtain some special effects by 'nesting' them in unusual ways: for example, to give text a coloured background, or put it in a box.

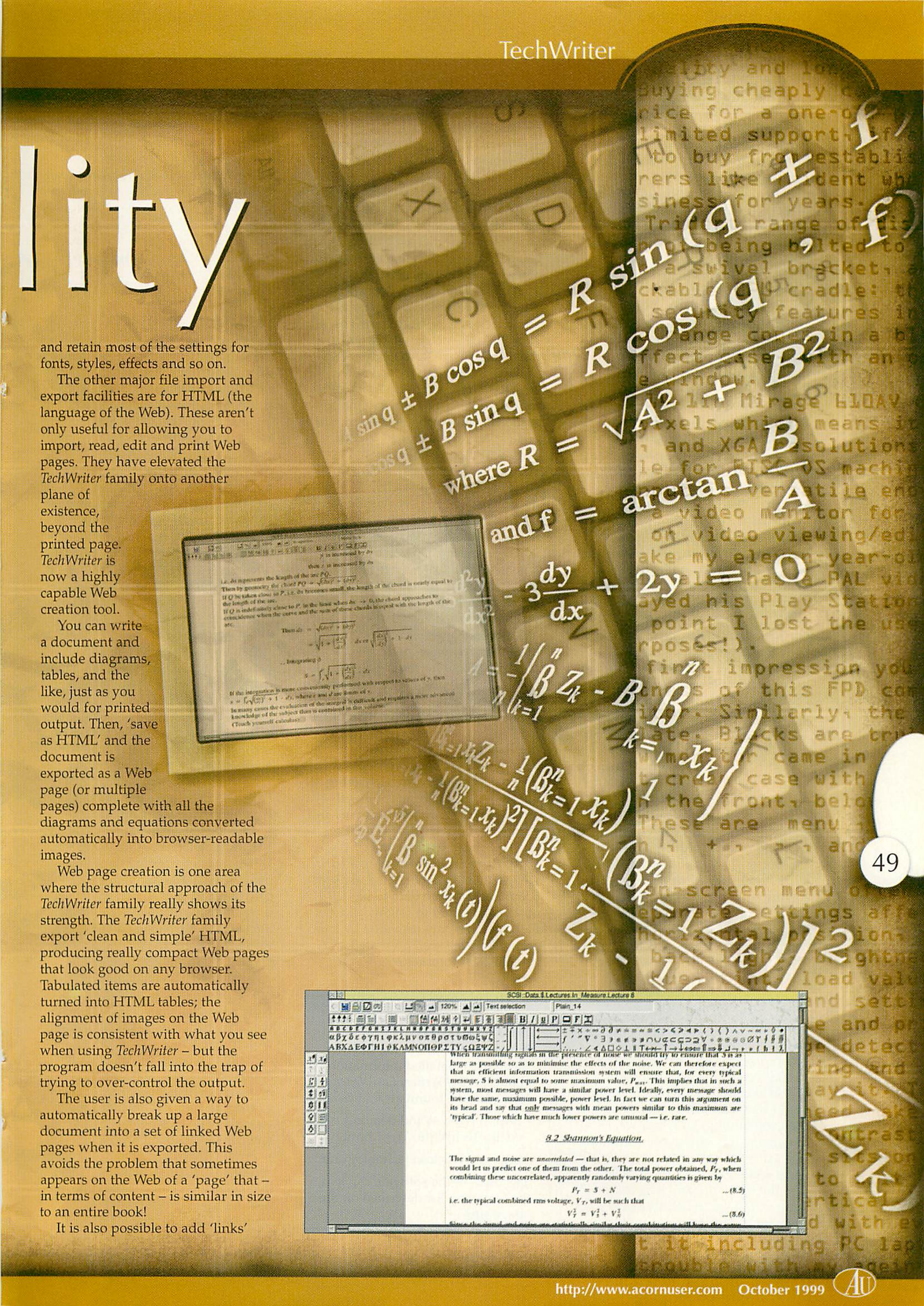
Interoperability

Among the biggest advantages of *TechWriter* is its extraordinary ability to import and export a large range of file formats. It can import and export *Word* (6, 7, and 8) documents, and import RTF. When exporting, all graphics (and equations) are automatically converted into BMPs (Windows bitmaps) so the result is fully readable using a suitable version of MS *Word*. Drawfiles are also automatically converted.

If you have *ImageFS2* running, it will be used automatically when importing a *Word* document to convert any bitmap images it understands into sprites, and turn WMF (vector graphic) files into drawfiles. (*TechWriter* and *EasiWriter* can import BMP images themselves, but *ImageFS2* is useful to cope with any other types you may find in a *Word* file.) In addition to graphics, features like tables, lists, and styles are also converted when importing and exporting *Word* documents.

For anyone who wants to use RISC OS, but has to exchange *Word* files with our MS-cursed colleagues, these *Word* import/export abilities alone make *TechWriter* and *EasiWriter* 'worth the weight of the Icon Technology team' – Mike Glover and Bob Pollard – in gold.

DDF files (a sort of *Impression* version of rich text) can also be imported. This makes it possible to transfer information from old *Impression* documents into *TechWriter*



lity

and retain most of the settings for fonts, styles, effects and so on.

The other major file import and export facilities are for HTML (the language of the Web). These aren't only useful for allowing you to import, read, edit and print Web pages. They have elevated the *TechWriter* family onto another plane of existence, beyond the printed page. *TechWriter* is now a highly capable Web creation tool.

You can write a document and include diagrams, tables, and the like, just as you would for printed output. Then, 'save as HTML' and the document is exported as a Web page (or multiple pages) complete with all the diagrams and equations converted automatically into browser-readable images.

Web page creation is one area where the structural approach of the *TechWriter* family really shows its strength. The *TechWriter* family export 'clean and simple' HTML, producing really compact Web pages that look good on any browser. Tabulated items are automatically turned into HTML tables; the alignment of images on the Web page is consistent with what you see when using *TechWriter* – but the program doesn't fall into the trap of trying to over-control the output.

The user is also given a way to automatically break up a large document into a set of linked Web pages when it is exported. This avoids the problem that sometimes appears on the Web of a 'page' that – in terms of content – is similar in size to an entire book!

It is also possible to add 'links'

between items on *TechWriter* document pages that function in a similar way to those you encounter on a Web page, and actual links are preserved when you import or export Web pages. As a result, *TechWriter* is now a very capable hypertext system. This is useful to display reference documentation on screen, even if you have no intention of exporting the results as Web pages. It is now possible to click on a link on a *TechWriter* page and be taken to a new page, or even somewhere in a new document.

Tech to draw

Although *Word* documents and Web pages are the headliners on the import/export list, it includes many other useful items. My personal favourite is one that people rarely seem to notice: Save as draw.

Its use is very similar to the way *Paint* can be employed to grab a sprite by drawing a rectangle on the screen. The difference is that it exports as a drawfile all the items in a rectangle dragged over the page, but laid out just as they appear on that page! This is an excellent way to export laid-out text, equations, tables, or whatever you like into any other application that can accept drawfiles.

There are lots of nice features like this which make working easier. For example, drop a CSV file on the page and *TechWriter* will automatically create a table and place the data in the appropriate cells. Tables in HTML format are similarly imported. You can export documents in the form of a TeX file, or as PostScript. This is very useful when submitting professional documents to various journals or to printers who have never heard of RISC OS.

A list of features can't really convey just how easy it is to create documents with *TechWriter*. I recall an Orthodox Jewish friend once asking "What does bacon taste like?". How do you answer that ... apart from simply saying "Great!"? Well, someone familiar with the *TechWriter* family can encounter a similar communication problem.

It's like the feeling we all have about why RISC OS is 'better' to use than something like Windows. Hard to explain, but experience shows that it is. After using *TechWriter* for a short while I realised I had fallen into the habit of using it as a sort of 'aid to thinking' when trying to work out a mathematical or scientific argument. It was so easy to use it had replaced scribbling on scraps of paper.

Writing in tongues

The *TechWriter* family offer some valuable multi-lingual facilities. As standard, the application comes with an appropriate spellcheck dictionary. This is the 'UK' one by default. A number of other dictionaries are available, ranging from some you'd expect like French and German, to others like Swedish. When you have to write multi-lingual documents, the structural nature of *TechWriter* comes to your aid. If you wish, individual sections, paragraphs, and so on, can have a 'country' assigned to them. They will then be spellchecked against the appropriate dictionary, ensuring that multi-lingual documents are properly verified.

In addition to this, you can nominate a font as being 'right-to-left'. This means that you can then type in and edit languages like Hebrew – either as selections or throughout the document – and they will be formatted and displayed in 'right-to-left' order. Taken together, these features make the *TechWriter* family excellent for multi-lingual use.

Although it doesn't appear on any of the menus, nor on the button bar, the helpfulness and dedication of the Icon Technology team is another of the *TechWriter* family's great strengths. They have built up a well-deserved reputation by answering questions, dealing promptly with any minor bugs in new versions, and adding features requested by users.

The printed manuals for *TechWriter* and *EasiWriter* are also well written. In general, manuals for computer software tend to be obscure and hard to follow. However, the ones provided by Icon Technology are well presented and contain clear tutorials to get you started.

Icon Technology's excellent reputation for support and customer care has recently been enhanced by their active involvement in an e-mail 'mailing list' for users. The *TechWriter* family of applications has developed over the years in a most impressive manner and throughout that time they have shown that they listen very carefully to what their users are saying.

More about...

If you have access to the Internet, much more detailed information about the *TechWriter/EasiWriter* family can be found at:

http://www.st-and.demon.co.uk/TechWrite/Tips1.html

http://www.IconTechnology.net

and users of the software can join the e-mailing list described on the above sites.

Getting animated

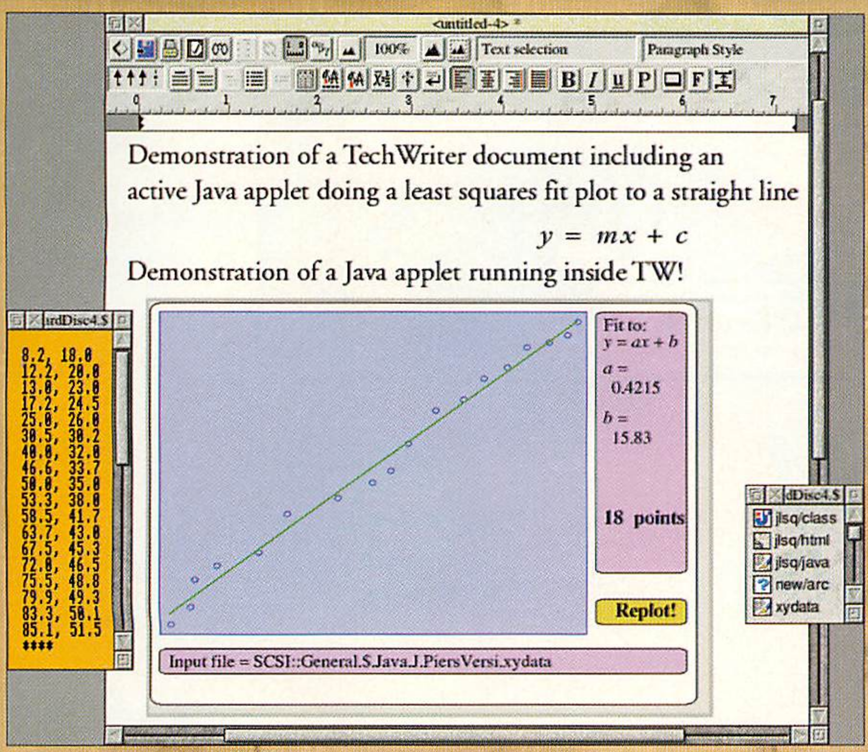
The new *Pro+* versions have some outstanding features which extend them yet further. The two most significant features are perhaps the ability to include animations and 'plug-ins' – although the enhanced ability to adjust the positioning of images on the page has also prompted many long-term users to upgrade.

The ability to include and display animated graphics is obviously primarily useful for on-screen documentation, either as *TechWriter* documents or Web pages. And until someone comes up with 'animation-capable paper' this will remain the case! However, the facility turns out to have a number of side benefits. Animations can be accepted in a variety of forms, including animated GIFs, Iota *Complete Animator* files, and *Euclid Ace* files.

Pro+ can also accept, and animate, spritefiles that contain a series of sprites. As a result it isn't actually necessary to have any additional software to make animations for a *Pro+* document, or for Web pages. *Paint* will do at a pinch.

In addition, *Pro+* can now convert some animation types by using the HTML export/import as a mechanism for invoking file conversion. For example, try dropping an Iota *Complete Animator* file onto a *Pro+* page and you will see it displayed. Export the page as HTML and this animation will be converted into an animated GIF that can be seen using a normal browser. Now re-import the HTML – or just the GIF – back into *Pro+* and it will be converted back into a spritefile containing a series of sprites as the animation frames. This can be animated on the *Pro+* page, or saved as a normal spritefile. Thus, *Pro+* can essentially be used to create, display, and convert animations.

Another offshoot of this ability to accept and display animated GIFs is that static GIFs can now be dropped onto a *Pro+* page and will be converted into a sprite for display.



A Java applet running in a TechWriter Document

Hence GIFs join sprites, drawfiles, JPEGs, and PNGs as images that *TechWriter* can display.

Acorn (as was) developed a plug-in system to allow items embedded on a Web page to call other applications or pieces of code. The original use for this was to provide support for things like Java applets on Web pages. But there's nothing to stop other types of program using this protocol and *Pro+* does. As a result, it is now possible to include Java applets that run on *Pro+* pages. This has a number of quite dramatic consequences. The most obvious – and simplest – being that it is now possible to use *Pro+* to work on Web pages that include Java applets. However, it goes much further than that...

Despite what is written about it on the Web, Java is intended not only to add 'eye candy' to Web pages. It is a serious, powerful programming language and environment. Therefore, by enabling the use of Java, the plug-in capability allows some quite significant and useful additions to *TechWriter* documents.

The easiest example I can give here is a demonstration Java applet I wrote myself, shown above. The applet reads a series of numbers from a text file, does a 'least squares-fit' to a straight line, and then displays the result on the *TechWriter* page. To change the displayed graph, just edit the data, save the new version of the file, and click on the 're-plot' button of the applet.

This simple example isn't meant to illustrate a dramatic advance in numerical data analysis. However, it does show that it is now possible to manipulate data and graphically display the results automatically on a *TechWriter* page. Although this example uses Java, any system could be employed that follows the Acorn-defined plug-in specifications.

Although these are still early days, the implications are quite dramatic. Imagine being able to include 'Mathematica-like' active analysis and graphical displays on document pages. Or perhaps a mini spreadsheet – or whatever. The point here is that the applications of this facility are unrestricted: Icon Technology are throwing open *TechWriter* and allowing third parties to use it as a host for almost any plug-in extras they wish.

Take the short-cut

Among the new features of the *Pro+* versions is a considerable increase in the number of available keyboard shortcuts. This is useful, as most people who write a great deal tend to find it much quicker to access facilities via the keyboard while typing, rather than stop and use the mouse.

Pro+ has over 100 new potential keyboard shortcuts. In earlier versions, these were provided as a quick way to access the menus and button bar. Now they can also be used for characters that aren't normally available with a single keypress. To illustrate: the current version (6.05 as I write this) has some modified keypad actions. For example, pressing the '/' key on the keypad will type a ÷ (division) sign, while pressing the '.' key will type a '•' (middle-dot – proper decimal point). It is now also possible for the user to adjust or rearrange the actions of the keys in a variety of ways according to personal preference.

I have been using various incarnations of *TechWriter* since 1992. Quite frankly, it has transformed my working life due to its power, flexibility, and sheer usefulness. So far as I am concerned, it has become the 'Jewel in the Crown' of RISC OS software. With it, I find that RISC OS easily remains my first choice for a professional working platform. Without it I probably would have been driven onto a different system altogether. Having seen the way the *TechWriter* family has developed I have grown more and more impressed with both it, and its creators.

So, the bottom line is, if you have to write anything on a RISC OS machine, you should do yourself a favour and get a wordprocessor from the *Techwriter* family. If you only write the occasional letter or short document, *EasiWriter* will fit the bill. However, if you want what is probably the most usable and flexible document processor on any computer platform, go buy *TechWriter Pro+*. END

Product details

Product: EasiWriter pro v.5
Price: £99.00 + VAT and P&P (£119.84)

Product: EasiWriter pro+
Price: £129.00 + VAT and P&P (£155.10)

Product: TechWriter pro v.5
Price: £149.00 + VAT and P&P (£178.59)

Product: TechWriter pro+
Price: £179.00 + VAT and P&P (£237.35)

Note: EasiWriter pro+ is currently on offer at £139.00 inc. and TW pro+ at £199.00 inc.

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Viral attack

Alasdair Bailey tests some remedies

Many over-enthusiastic Acorn users will have you believe that viruses are not something we should worry about. Fortunately, there aren't many viruses on this platform compared to others but that is no reason for complacency. Viruses running under RISC OS can be just as deadly as those found elsewhere.

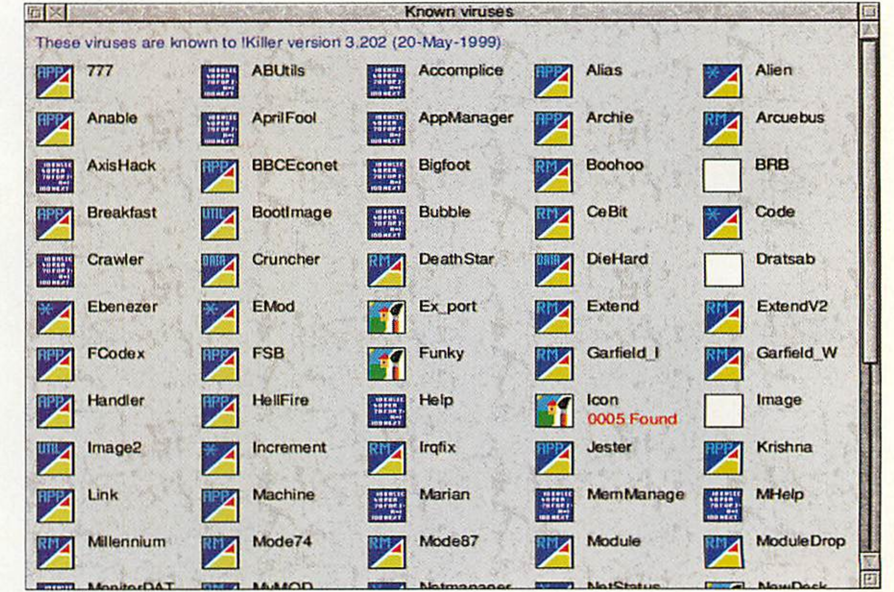
Only a handful of new strains have been discovered on the RISC OS platform so far this year, yet the Windows platform has already encountered a number of headline-making viruses, capable of wiping out entire networks. Luckily, you are safe from these hordes of PC viruses unless you have a PC card or use some form of emulation on your Acorn, in which case be sure to install appropriate checking software for that too.

Almost everyone will have encountered the rather harmless *Icon* and *Module* viruses on their Acorn at some stage, but there are some that are much more deadly than these plain self-replicating strains. Moreover, even if a virus doesn't destroy your work, it may, due to being badly written, destabilise your computer simply by running. For that reason, all viruses are dangerous, even the so-called 'safe' ones.

Once a virus infection has taken place from any source, it must be removed as soon as possible. It is possible to manually remove some viruses but this is not recommended; it is tedious work and there is the risk of missing one infection and seeing a whole disc re-infected. For this reason, virus protection programs that automatically remove viruses are strongly recommended.

Pineapple Virus Killer
Checking
ller.logs.Captured.Extend.547_!boot
30 objects checked
0 infections
Abort Pause

Killer's scan window



Just half of the Viruses known to Killer

There are currently three up-to-date virus protectors on the RISC OS platform: *Slayer*, *VZap* and *Killer*, which this review will concentrate on. Other PD virus checking/ removal programs exist, but either they only deal with specific viruses or their authors have ceased to maintain them in line with the appearance of new viruses.

The enforcers

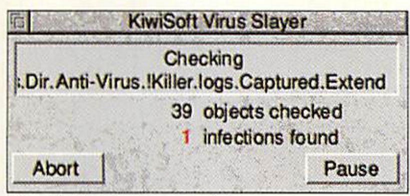
VZap is maintained by Paul Vigay, a distinguished figure both on the Acorn scene and among investigators of the paranormal. This Shareware application has been around for quite some time and costs just £10 to register. Version 1.33 was the one used in this review.

Slayer is the new kid on the block. The product has been under development for over four years now and a full release should have taken place by the time you read this. The good news is that it will be freeware: see the product info box for details of where to download it. This review is based upon version 0.55 which does not at this time include network code: a small charge will be made for this. *Slayer* was written by Kiwi Software (UK).

Killer is the most established and only commercial virus killer on the market. A year's subscription of £28.20 buys you into the Pineapple Virus Protection Scheme which includes a copy of the program and regular updates throughout the year. *Killer* is maintained by Alan Glover, a former Acorn employee now working on set-top boxes for iMagicTV by day. *Killer* version 3.202 was reviewed.

Virus removal

When buying a virus checker, you should look primarily at the range of viruses which it is able to detect and



Slayer's filer-action type window

Some nasties...

T2	Possibly the most dangerous virus ever written for RISC OS. Displays silly messages and destroys data on various dates including "New Years Resolution: I will keep my discs write protected" on 1st January followed by an attempt to wipe the map of the machine's harddisc and of any floppies present.
Icon	A simple class of virus which replicates itself within applications by writing a small file containing its code then adding a line to the application's *!Boot* file which will ensure the virus is loaded every time it is seen by the filer. Some strains are dangerous.
Module	Another so-called harmless virus which appends itself to system modules.
Jester	A fairly recent virus which appends itself to absolute files (primarily applications' *!RunImage* files).

remove. *Killer* is the best RISC OS product on this front, claiming to be able to detect and remove all 216 known virus strains.

Both the others are capable of detecting and removing a satisfactory number of virus strains, and managed to deal with all those I have encountered in the wild. It is worth pointing out that leading-brand Windows anti-virus programs only check for recent strains of virus: to check for the full list at every scan would be an intolerably slow process.

Trials

If you are looking at purchasing a virus protection product you should also take account of how well that product will cope when running on an infected system. A number of tests were carried out in order to gauge how effectively these three products could deal with the situations that were thrown at them. Please note that products are dealt with alphabetically rather than according to performance.

1. The wimp's challenge

In this trial, each program was given an identical directory tree riddled with infections of various viruses and asked to simply report what was present. *Killer* successfully identified and logged all but three infections present. It was subsequently able to remove all infections detected. However, a re-scan was necessary to clear up one multiple infection on one occasion.

Slayer not as effective as *Killer*, it only detected around three-quarters of the infections present. However, a handful of strains were detected and removed by *Slayer* which went unnoticed by *Killer*. *VZap* didn't detect as many infections as *Killer* but it was able to successfully remove all that it did find.

2. Trial by File

If a virus protector is itself infected by a virus, it is vital that it detects this as soon as possible, otherwise it could begin spawning the virus instead of killing them. For this test, a small BASIC file was placed inside each application and the application's *!Run* file modified with the insertion of extra characters in order to simulate an infection by an unknown virus.

Killer checks the integrity of its files regularly while running as well as when loading. The alien file was detected and reported to the user almost instantly. However, a re-install was necessary in order to restore the *!Run* file. *Slayer* also detected the file and *!Run* file modification almost instantly. *Slayer* was also able to rebuild its *!Run* file, thus saving the user from a full re-install.

VZap reported that it had been tampered with but required re-installation. *VZap's* course of action is acceptable but it would have been nicer to have seen it delete the file and rebuild the *!Run* file as with *Slayer*.

3. Jungle warfare

"It's a jungle out there": time to clear things up then! In this test, the virus protectors were themselves thrown into the fray and the results were carefully monitored.

The protection module, *VProtect*, was disabled for this test to allow viruses to wage war on the trio of apps without restraint. Applications were booted, loaded and operated to simulate an everyday situation in the real world.

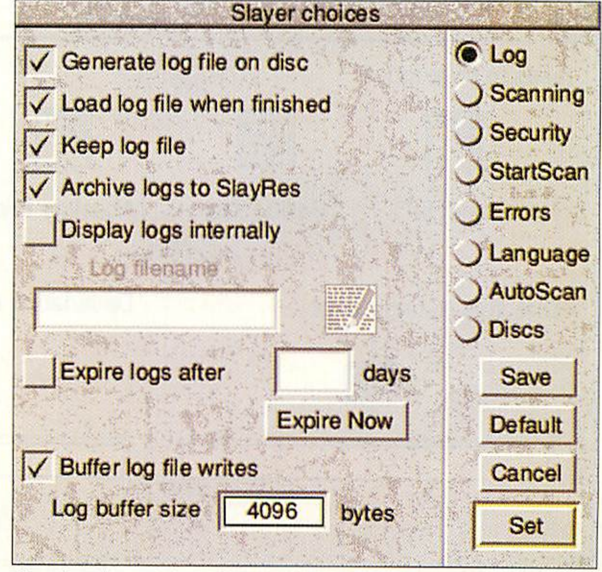
Killer itself had become infected so a clean copy was used from a write-protected floppy disc.

Killer was able to deal with all viruses in memory on start-up and those on disc too. A second scan was necessary to deal with one multiple infection but apart from that, *Killer* coped excellently. As demonstrated in the previous tests, *Slayer* was again able to disinfect itself of an Icon infection on start-up. The program then coped well and removed all the viruses stated in its documentation. When run from a write-protected floppy disc, *VZap* was able to start and then fared similarly to *Slayer*.

General features

So far, we have mainly looked at the raw scanning engines present in the three applications. The implementation of these also needs to be investigated.

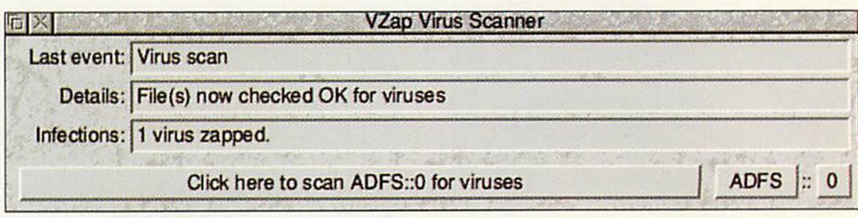
Usability is an important feature in any virus protection product. A user with little computer experience should be able to install the product and remove viruses from a system without having to take a PhD in



Slayer's options window: plenty to fiddle with here!

Test area

- A5000 with 4MB RAM using a write-protected *Nexus* file server providing safe storage for the checkers themselves. This facility was kindly provided by Alan Glover, author of *Killer*.
- The author's own StrongARM Risc PC was also used to carry out speed tests on the removal of less harmful viruses.
- *VProtect*, the virus protection module, written by the authors of *Killer* and supplied with all new computers, was running on both machines.



VZap's scan progress window

computer science. *Slayer* includes many options to allow customisation by more experienced users but it will work just fine out of the box for those less so. For example, it is possible to instruct *Slayer* to scan a particular directory on start-up.

This feature could be very useful for ensuring that particularly sensitive areas remain clean (download folders, *!Boot* structure, and so on).

Killer is also well suited to the first time user, as it includes a printed guide and has an intuitive user interface.

When scanning, it also employs a progress box very similar to the standard filer action window, as does *Slayer*. This is also good for first time users, unlike *VZap's* large, daunting status window which fills a large proportion of the screen on older machines.

Slayer is, without doubt, the fastest of the three. The engine is highly optimised, resulting in lightning-fast scanning times – also good for reassuring new users.

Killer comes second with *VZap* crawling across the line in third place. *Slayer* is also a much neater program, occupying less than half the memory *Killer* does during normal operations as well as being far less demanding on processor time while inactive.

These factors might not sound important to 50Mb StrongARM Risc PC users but they might be to schools, where hardware resources can be far more limited.

Another aspect of *Slayer* which deserves some praise is its ability to calculate 'Finger Prints' for specified files and then keep a lookout for changes to those files.

This will no doubt aid the detection of new strains of virus as well as helping to guard against existing ones.

Slayer also includes a small program called *Authorise* which may be used to restrict access to floppy discs which have not previously been approved for use on the system.

Such a feature would be very useful in schools, where the authorisation only of certain work discs would deter students from bringing in programs from home.

Comprehensive network support is planned for *Slayer* in the near future but there will be a small charge to add that functionality to the freeware version.

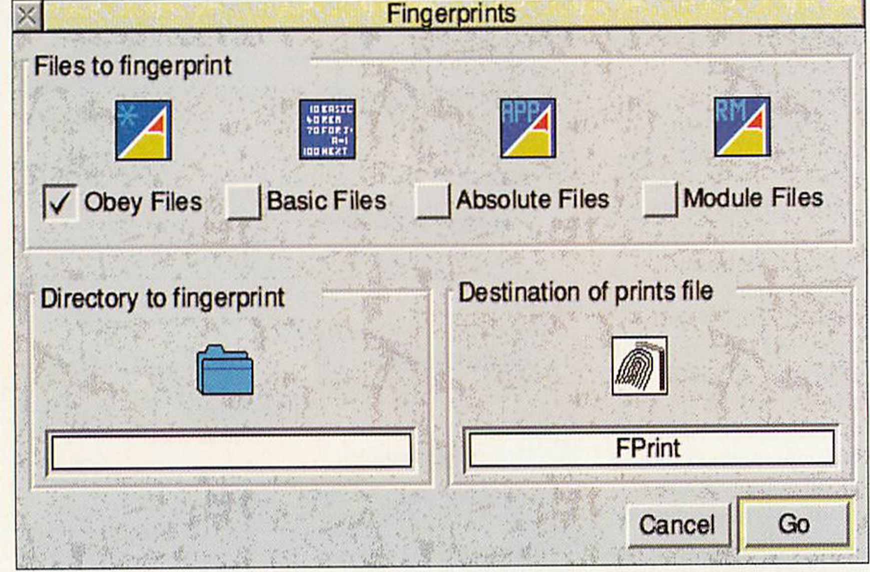
Killer and *VZap* are both fully equipped to scan network drives but *Slayer's* network code should set the standard if things continue as they are. All three products are still being actively developed with a major new version of *VZap* due before the end of the year.

All the authors have promised to support their products for as long as there are users, but if fast response really matters go for *Killer*.

Due to the large number of existing users, samples of future viruses are bound to reach the authors of *Killer* first.

Arrangements are also in place for subscribers to *Killer's* Virus Protection Scheme to receive upgrades by post as they occur. A mechanism for automatic updates from the Internet is planned for *Slayer* prior to final release, a feature which all virus killers could benefit from.

To conclude, if you use your computer regularly for distributing files or downloading them from dubious Internet sites then go for *Killer* for peace of mind alone. Otherwise, download *Slayer*: it's completely free and should be sufficient for the average home user. END



Slayer's checksum utility

Product details

Product:	Killer
Price:	£28.20 (£23.50/annum for renewals)
Supplier:	Pineapple Software, 352 Green Lane, Ilford, Essex IG3 9JS
Web:	www.pineaple.demon.co.uk
E-mail:	sales@pineaple.demon.co.uk
Phone:	0181 599 1476
Fax:	0181 598 2343

Product:	Slayer
Price:	Free
Supplier:	Kiwi Software (UK), 12 The Quantocks, Dibden Purlieu, The New Forest, Hampshire. SO45 5QU
Phone:	0238 084 6431
Web:	www.virusslayer.cjb.net
E-mail:	unciscy@eh.or

Product:	VZap
Price:	£10 (shareware registration)
Supplier:	Paul Vigay
Web:	www.vigay.com
E-mail:	pvigay@interalpha.co.uk







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Webster XL	*Browser with frames, tables, forms, sound and JavaScript*	£25

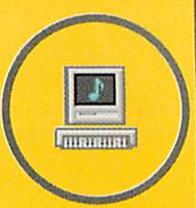
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Numbertime

We've gotten together with Logotron to offer Acorn User readers a superb discount on the Numbertime series (linked to the BBC Television show of the same name).

Numbertime Time is designed for use with early learners who are getting to grips with the concept of time. From learning how to read the clock, to sequencing the events of the day, Numbertime Time uses sound and graphics to stimulate a child's recognition.

Numbertime 11-20 tests numeracy across six different games which cover skills ranging from addition of numbers within a fixed pattern, to patterns, to adding together dice throws, with graphics and sound which again act as effective stimuli and make the programs entertaining.

Usually priced at £32.90, we can offer them to you for just £26.32 each. Or you can purchase the complete set of five Numbertime packages (the latest of which – these two – are CD-ROM based) for only £115.15 (saving £49.35).



Picture Book 2

The Picture Book 2 suite consists of six high quality programs, specially designed to help pre-school, primary and special needs children with Reading, Spelling and Counting in an enjoyable and very effective way. Here are the six programs contained within the suite:

Alphabet Book is a computer-based version of the traditional book – simply pressing a letter of the alphabet returns a sound and picture corresponding to that key.

Snap is based on the popular card game. Children wait until a pair of pictures, sound effects or words are displayed and the first player to correctly spot a match and press his or her key scores a point.

Count Em sets children the task of adding up the number of identical copies of a particular picture that appear on the screen.

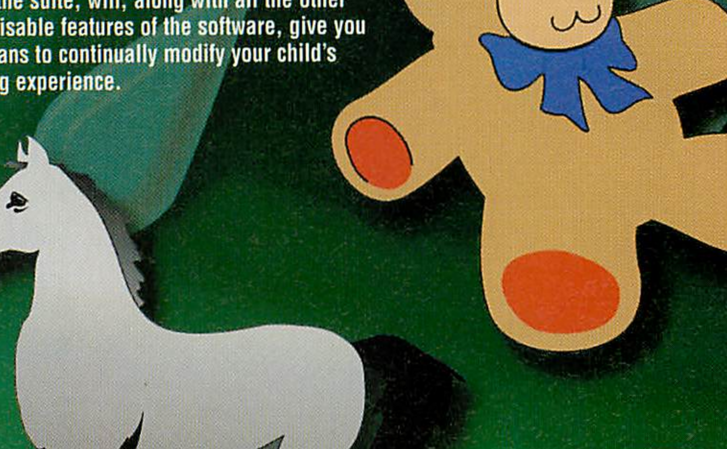
Spell It uses a tried and tested means of teaching spelling to children: they'll be spelling simple words within a very short space of time.

FlashCard can help you ensure that your child can recognise and spell words within whichever alphabet file is loaded. You encourage them to shout out the word when it appears on screen, and within a few moments a picture appears to show them if they're right.

Finally, WordMatch invites children to press a number linking the correct word to a picture.

Also included in the package is AlphaEdit, the Picture Book 2 resource creator which, by enabling you to create your own files for use within the suite, will, along with all the other customisable features of the software, give you the means to continually modify your child's learning experience.





Usually priced at £24.95, the suite is on offer to Acorn User readers for just £20 (fully inclusive).

Destiny



Irrespective of where you work, you will probably have come across a first-person shoot 'em up game in the same vein as *Doom*, *Quake* and so on. Up to now all these games have all been PC imports ...enter *Destiny*, the first original game of this type for the RISC OS platform.

The culmination of four years work, *Destiny* features high resolution 3D graphics, a huge variety of levels, serious fire power, intelligent enemies, original music and much much more.

The game requires either a Risc PC or A7000+ (a StrongARM is highly recommended) with 8Mb RAM and a CD-ROM drive.

Priced at £30, or £25 to Acorn User subscribers

Acorn User past CD-ROMs

We've located a small quantity of past Acorn User CD-ROMs, which we've decided to make available through the magazine as it's quite possible that some of you will not have a complete set. We're not splitting this set up, and it is strictly subject to availability – so, if you need a disc (or three) to complete your set, order now!

The discs we've found are:

- January '96 (Acorn Educational Directory – also features numerous demonstrations of educational and practical programs)
- August '96 (Collectors CD-ROM 2 – lots of Web stuff, utilities, games and much more)
- December '97 (Collectors CD-ROM 3 – Huge Destiny demonstration, past cover discs and much more).

This three-disc set costs just £5



Basic & Wimp Programmers' Toolkit

We folks at Acorn User know you like to program – that is plain enough for anybody to see. But we also know there are a few of you who perhaps don't have the time to sit down and learn, or would like it to be just that little bit easier.

In this exclusive new reader offer, ProAction are offering Acorn User readers a choice of two special programmers' packs: if you only have access to a floppy disc drive, the Basic & Wimp Programmers' Toolkits (supplied with full documentation) will serve as the ideal set of utilities to cater for your programming needs. If you have a CD-ROM drive, you may now choose the new Total Programmers' Toolkit, containing the Basic & Wimp Toolkits, Vigil and some other essential utilities for Wimp programmers.

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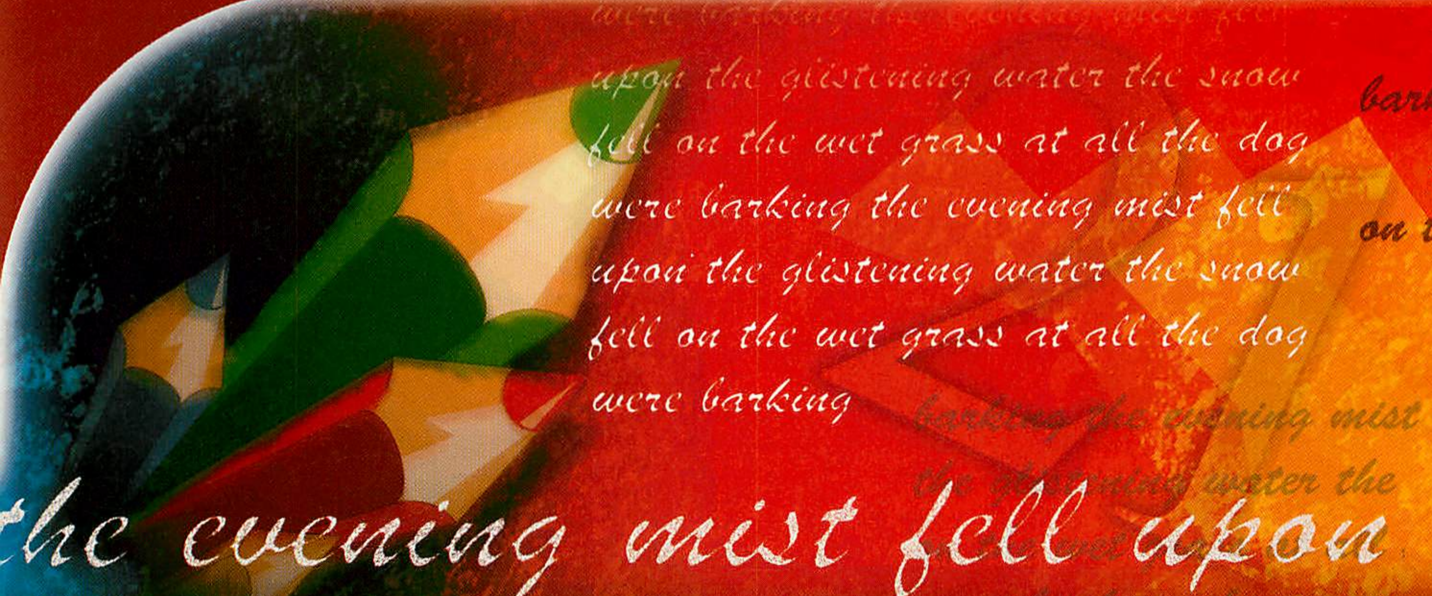
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Running true to type

Bruce Goatly looks at some fonty packages from EFF

The computing public's appetite for fonts seems undiminished with the passage of years. This is obviously good news for font suppliers and the makers of harddiscs, if a little worrying for purists in design as they envisage documents crammed with a plethora of unrelated and jarring typefaces.

EFF, veteran suppliers of high-quality fonts for the Acorn market, have recently expanded their range, it now includes applications to help users expand their own font collection and also document the growth. They've also brought out a set of fonts to save you from ever having to write another letter by hand.

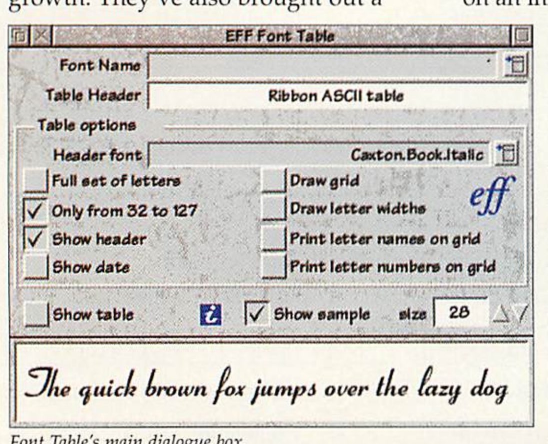
True Type Translator

A couple of years ago, and mostly out of curiosity, I posted a query to one of the Acorn newsgroups asking whether anyone knew of a utility that would translate TrueType fonts (a format widely used on PCs) to Acorn format. The most helpful response I received was along the lines, "No, and why would you want to?", the grounds being that TrueType is based on an inferior philosophy to Acorn's or, for that matter, Adobe's PostScript.

While this is certainly true, it is also undeniable that the sheer size of the PC market means that there are thousands of TrueType fonts around that can be had for the cost of a phone call or a cheap CD. So, regardless of one's prejudices, a way of tapping into that resource can only be a Good Thing.

Ever with their eye on all things fonty, EFF have turned up trumps with their *True Type Translator* (TTT). To steal a phrase from a totally different product, "It does exactly what it says on the box", and apart from a slight hitch with the protection system when I tried to install it (which the good Dr Detyna quickly solved), it made light of what I suspect is a rather complicated job.

Dragging a TrueType font to the iconbar icon brings up the main control dialogue, which has panels covering the Acorn side of the



Font Table's main dialogue box.

TrueType Font Translator and Viewer
Font translating
TrueType file: CDFS::D.$.FONTS.TTF.B.BODONI/TTF
Acorn encoding: Apple
Save in: SCSI::Beeg.$.PC.Public.!fonts.
Acorn font name: Bodoni
Font info
Windows name: Bodoni
PostScript name: Bodoni
Copyright: Boondoggle
Trademark
Number of glyphs: 399 empty glyphs: 172
Settings
Use PS / Use Unicode / Odd-even
Display options
Show sample / Antialias / point size 32
The quick brown fox jumps over a lazy dog
Show Font Table / point size 24
Make Acorn font / Add hinting

TTT's main dialogue



TTT's font table in action (Apple encoding) – note the holes in £, ¥, Æ and Ø caused by an incorrect 'Odd–Even' setting.

translation, information on the original font, settings controlling the conversion itself, various display options, and a special bonus panel – you'll see why I call it that in a moment – that allows you to add hinting and also sets the conversion in motion.

In the top panel, labelled Font Translating, you can select from a variety of Acorn encodings for the resulting font. You can even opt for Apple encoding if you want to be Mac-compatible. As with Acorn's *T1ToFont*, you can choose where fonts will be saved and specify the name each one will be given on the Acorn system.

The Font Info panel is purely informational and tells you all about the font's origins as stored in the font itself. It also shows you how many glyphs (separate character shapes) are defined in the font and how many of them are innocent of any useful information.

The Settings options are of two types: the first determines which of two internal font encoding tables (how characters are assigned to positions in the TrueType font) will be used during translation. The choice is between PostScript and Unicode; fortunately you don't need to know the sordid history to make a successful translation, because you can quickly experiment to find the option that gives the best arrangement.

The 'Odd-Even' button determines which winding rule will be used, in the same way as in *Draw*, to ensure that composite characters with overlapping pieces don't end up with holes in them.

The Display Options panel gives you the chance to check what the font looks like before translating it – you can choose just a text sample or a display of the full font table, and change the font size in each independently. If your machine isn't short of memory you can have the font anti-aliased to give you a better idea of how it will appear on screen.

So to the bottom panel, where the whole enterprise is set in motion. You have the final option of whether or not to apply hinting (according to the manual this is of the NDT variety, as popularised by iSV) to avoid the disappearance of thin lines.

Adding hinting makes a substantial difference to the appearance of the sample and font table on screen when anti-aliasing is not turned on – the font becomes much darker. With anti-aliasing the difference is much less marked, as one might expect.

The 'Make Acorn font' button works as advertised – if you can see it, that is. This is why I described the bottom panel somewhat facetiously as a bonus: if the font is subject to licensing restrictions there may be a red warning panel in its place. (As a linguistic aside, notice the correct and precise use of the word 'may'!)

If you have a lot of fonts of uncertain provenance, it is reassuring that you aren't allowed to break the law inadvertently, even at the cost of a momentary flash of irritation. However, copyrighted fonts aren't necessarily protected in this way, so it's important to check the copyright

New Caledonia Italic ASCII table

	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	
													…	™	‰
‘	’	‹	›	“	”	„	–	—	Œ	œ	†	‡	ﬁ	ﬂ	
	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯
°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

01 July 1999 © 1993-98 The Electronic Font Foundry

A 'full set' font table.

notice in the Font Info panel.

There is hardly more to be said. The converted fonts perform correctly; that they lack kerning and that the files can be much larger than normal Acorn ones can't be laid at *TTT*'s feet. And you can save most of your preferred option settings.

There's no printed manual; instead an online one is supplied. Now, as a rule I don't like online manuals because I generally find them inconvenient. However, the *EFFmanual* application for *TTT* is well written (with a charming lack of definite articles), informative and helpful.

It has to be said that, as in the Acorn market, a non-negligible proportion of the 'PD' TrueType fonts are not worth the time or disk space of translating, because of unsightly spacing or a lack of characters. But there are also many good ones that are not subject to copyright restrictions, so the modest investment in *TTT* will repay dividends in a continuous supply of usable fonts. A word of caution, though – to

Ribbon ASCII table

32	33 !	34 "	35 #	36 $	37 %	38 &	39 '	40 (	41)	42 *	43 +	44 ,	45 -	46 .	47 /
48 0	49 1	50 2	51 3	52 4	53 5	54 6	55 7	56 8	57 9	58 :	59 ;	60 <	61 =	62 >	63 ?
64 @	65 A	66 B	67 C	68 D	69 E	70 F	71 G	72 H	73 I	74 J	75 K	76 L	77 M	78 N	79 O
80 P	81 Q	82 R	83 S	84 T	85 U	86 V	87 W	88 X	89 Y	90 Z	91 [	92 \	93]	94 ^	95 _
96 `	97 a	98 b	99 c	100 d	101 e	102 f	103 g	104 h	105 i	106 j	107 k	108 l	109 m	110 n	111 o
112 p	113 q	114 r	115 s	116 t	117 u	118 v	119 w	120 x	121 y	122 z	123 {	124 |	125 }	126 ~	127

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A 'basic set' font table, showing letter widths.

fox fox

fox fox

The difference a hint makes: on the left, hinting is off; on the right it is turned on. Without anti-aliasing (top) the difference is much greater than with it (bottom).

paraphrase something I said in a DTP series long ago in a galaxy far, far away: "Don't use them all at once".

Font Table

As a worthy companion to *TTT*, EFF's *Font Table* has much the same philosophy: do what you set out to do, simply and efficiently. If you've ever wanted to produce tables of characters in a font quickly and easily, this application is all you need, generating them conveniently in drawfile format.

It uses the same protection system as *TTT*, so I encountered the same installation problem; once loaded, though, *Font Table* is a doddle to use. Font selection is through the usual menu system, and you can choose a different font for the informational parts of the table (necessary if you are printing a symbol font).

If you decide you want only the normal alphanumeric and punctuation characters, use the 'Only from 32 to 127' option. This generates an A5 landscape table. Alternatively, the 'Full set of letters' button yields an A4 portrait table containing all the characters from 32 to 255.

The other options are much as you would expect from the button labels: the table can have a grid, letter names for all characters, letter numbers (useful for reminding you of the Alt-codes), a header with the title of your choice, a footer with the date of generation, and the letter widths of the characters displayed as a thin line.

The creator

The idea for The Handwritten Collection came along when a friend complained to me after I sent him a neatly typed letter instead of my usual slightly scruffy scribbles. "Where is your personality," he asked, "where is the atmosphere?" I spent the next few months investigating the possibilities and collecting dozens of samples of various handwriting styles. The Handwritten Collection was the result.

Since it takes a while to make a good-looking font from a scratch, the ultimate collection couldn't be very large – I opted instead for covering as wide a variety of styles as possible. Eight out of ten fonts are based on real people's handwriting.

The exceptions are EFF Kylie, where a calligraphic template was used as a model and EFF Hairy Harry, which was first drawn with a fountain pen with a tiny bit of tissue attached to the nib.

Each handwritten font was designed to represent a different style and convey a different mood; EFF Nat – energy and fun, EFF Marynia – well behaved accuracy, EFF Lou – rushed 'just a quick note' style, EFF Florentine – melancholic, hot and lazy summertime.

I hope they will bring a touch of humanity into the digital era.

Veronica Jedrychowska
The Electronic Font Foundry

The font sizes of the different parts of the table can be customised in an options dialogue; these can be saved, along with all your other choices. The sample text, which by default is the standard one about a fox, is editable in the display itself.

As with *TTT*, the manual is supplied in online form.

All in all, *Font Table* is an invaluable aid to keeping track of the character sets in your fonts, and is well worth the asking price.

Handwritten Font Collection

I don't know about your handwriting, but mine has degenerated into a sort of listless scrawl over the years. So if handwriting is a reflection of one's character I suppose it means that I've devolved into some kind of shaggy troglodyte [*Too true – Ed*].

But now I'm spared the embarrassment of revealing my true nature because EFF have helpfully developed ten fonts resembling a wide range of handwriting styles. This means that I can alter my persona to match the occasion, although none of the fonts provided is illegible enough to be a doctor's handwriting. I understand that EFF have a team of craftsmen working round the clock on that one.

An obvious omission from the set is a young child's careful attempts at non-joined-up writing – for this you would need one of EFF's Juvenile Script fonts. In addition, because the fonts have presumably been constructed from letters drawn singly, there is no joined-up effect in most of them. But I can't complain because I only progressed to joined-up writing last year.

In the sample you will see that *Nat* has a double quote on the baseline in place of an en dash (with *Font Table* I find that it is duplicated from character 150, no doubt by a slip of the mouse). This will have been put right by the time you read this.

Overall, the Handwritten Collection is a set of fonts that add a sense of fun to a page, and are worth having just for variety's sake. Now you must excuse me – I need to impersonate someone with character...

END

This is AgnesK – The lazy dog jumps over the quick brown fox
This is Antek – The lazy dog jumps over the quick brown fox
This is Ela – The lazy dog jumps over the quick brown fox
This is Florentine – The lazy dog jumps over the quick brown fox
This is Hairyharry – The lazy dog jumps over the quick
This is Jenny – The lazy dog jumps over the quick brown
This is Lou – The lazy dog jumps over the quick brown fox
This is Kylie – The lazy dog jumps over the quick brown fox
This is Marynia – The lazy dog jumps over the quick brown fox
This is Nat „ The lazy dog jumps over the quick brown fox

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Product details

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Price:	£47.59
Product:	Font Table
Price:	£9.99
Product:	EFF Handwritten Collection
Price:	£31.14
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Address:	11 Silwood Road, Ascot SL5 0PY
Tel:	01344 875 201
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Web:	http://www.eff.co.uk

Acorns in control

Mike Battersby looks at Data Harvest's latest products

F*lowol 2* control software has been described in previous articles in *Archimedes World* in Vol 15 issue 8 ('98) and Vol 16 issue 1 ('99). To recap for those who have not seen those articles: it is a flowchart control application that will work with a variety of buffer boxes; these are interfaces for a variety of input or output switches, which can be operated via an application such as *Flowol 2*.

By programming *Flowol 2*, the status of input switches connected to the buffer box can be detected, output switches can be turned on or off and motors run forward or backward. If the buffer box has analogue inputs such as a for a temperature sensor then *Flowol 2* can be programmed to react to these, for instance if the temperature rises above, or falls below, a particular level.

One drawback with buffer boxes is their price – typically over £200 each – which would make it expensive for a school, say, to buy a set for classroom use. However, *Flowol 2* works with many different types, even old ones such as the Deltronics Control IT box from the days of the BBC micro. Even so, it may still be the case that a school has only one of these, enough for a single computer and connected inputs and outputs.

This would cause problems, since control technology is a required part of the National Curriculum. One way round this is to use on-screen simulation of control scenarios, a facility which *Flowol 2* offers through its use of 'mimics'. These are animated simulations of real-life control technology, enabling a sequence of control instructions to be written and then played out.

Data Harvest, the publishers of *Flowol 2*, have released two new sets of mimics: 'Control Pictures' and 'Commotion Mimics', each a set of three simulations. They have also released a model of one of the Control Pictures mimics.

Control pictures

These are mimics which add variety to those normally supplied with *Flowol 2* and consist of a Washing Machine, Burglar Alarm system and Traffic Light system. They come with a booklet of instructions and exercises with copyable worksheets.

Each mimic can be displayed with or without labels showing the inputs and outputs that can be controlled on them.

Figure I shows the Washing Machine mimic with labels on and off. The labels act as reminders, when constructing a program, that input 2, for example, is the water level sensor, or output 4 is the outflow pump and so on. When running the program it is better to have the labels off so that they do not intrude on the animation. This

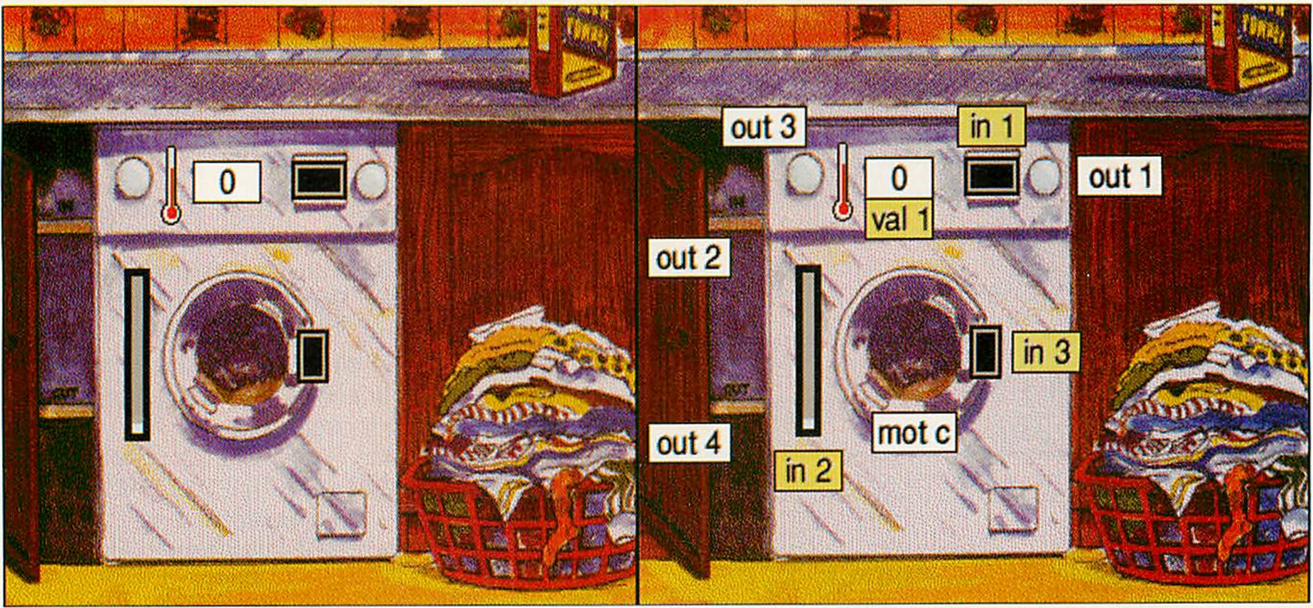


Figure I: Getting the washing machine to work

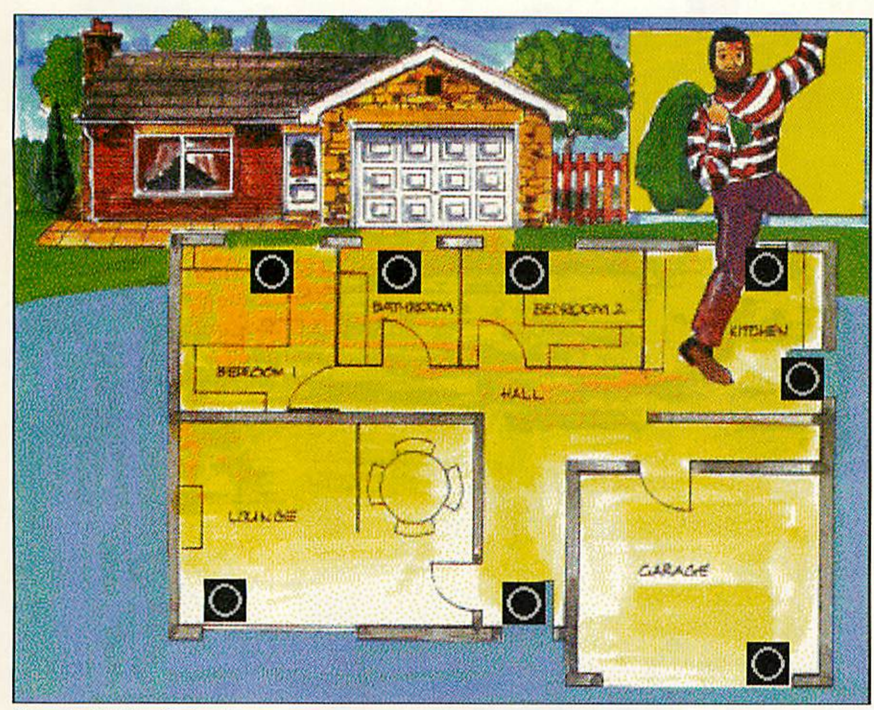


Figure II: Catching the burglar

set of mimics covers tasks of varying complexity. The burglar alarm is the simplest, with a number of inputs to detect entry and just one output, an alarm.

This is quite restricted in what it can do, but is an entry point to simple programs. The animation is very limited: just a light from the alarm when an input is clicked on to simulate entry by an intruder. It is difficult to see what animation could be added here: passers-by ignoring it or angry neighbours shouting at it to shut up would have been more realistic perhaps but not particularly useful!

One feature of *Flowol 2* is that it can run a number of flowcharts simultaneously. So, with eight detectors, this mimic provides practice in setting up concurrent events; since each event is essentially the same, it provides practice in duplicating program elements. Alternatively it may be activated using a single flowchart which continually monitors all the sensors. Figure II shows the burglar alarm mimic.

The Traffic Light system provides a slightly more complex simulation, with traffic lights at a crossroads as well as a light-controlled pedestrian crossing. This is a more developed version of a different mimic that has a pelican crossing which interrupts a flow of traffic.

There is only one input, a pedestrian pushbutton, but eight outputs, the three colours of the traffic lights in each of two directions plus the green (walk) and red (don't walk) lights of the pedestrian crossing. This is a good exercise for control programming, as the logical sequence of events has to be carefully thought out.

Also, there are differing levels of sophistication that can be used: for instance you can have the lights change only when the button is activated, or variably to allow for different flows of traffic through the junction. There is also the option of having a green 'walk' light flash in rapid succession just before it changes to red (involving a programming 'repeat loop'). Figure III shows a program to control the pedestrian lights while Figure IV shows the mimic with traffic lights in both directions set to red and the pedestrian light on green (walk).

Unfortunately the printed page cannot show the animation of the lights changing. It is not instantly apparent, but this mimic becomes very complex if you wish to have the traffic lights respond to the pushbutton at any time in their sequence; it is then quite a challenge to maintain the traffic lights' normal sequence and only activate the crossing lights when both directions are on red.

The most sophisticated and therefore potentially the most interesting simulation, is the washing machine, which has a variety of inputs including an analogue one (val 1 in Figure I) for the water temperature and five outputs including a motor (the drum: mot c in Figure I). This mimic therefore allows for quite complex programs and a variety of levels of difficulty by setting tasks relating to different wash cycles including the water temperature, duration of the cycles, number of rinses and so on. It also requires some careful thought as to the purpose of the inputs and outputs; be sure to check the door is closed before filling with water, for instance.

Commotion mimics

These mimics are designed to imitate three models produced by Commotion but marketed by both Commotion and Data Harvest. The advantage of these is that a school may afford one or two buffer boxes and one or two of these models so that after the mimic has been experimented with by many children they can take turns with the box and models to see their *Flowol* program acted out on a real model.

The models are not more than £30 each: fairly affordable if you already have buffer boxes. The mimics consist of 1) a clown with spinning

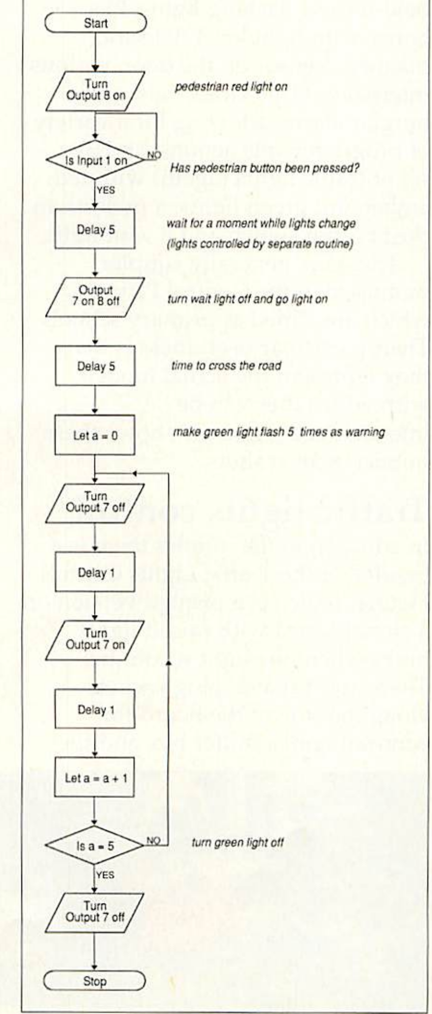


Figure III: A Flowol flowchart



Figure IV: Traffic light control

construct control flowcharts to increasing levels of sophistication. Being on-screen, they represent a cost effective solution to the teaching of control technology where expensive peripherals cannot be afforded.

The materials accompanying the Control Pictures have been well thought out and provide the teacher with ready-made worksheets if they do not have the time, or the inclination, to design their own.

The animation is usually limited to turning a light on or off, but still manages to convey the idea that a real item is being controlled by the program flowchart. The options of the Commotion models for the Commotion mimics and the Traffic Lights circuit board for the Traffic Lights mimic also help convey the idea of controlling external devices. These resources for control technology are generally well constructed, well thought out and quite affordable.

Data Harvest have a long association with the market, developing products for BBCs through to pocket books and later Acorns, and it is encouraging to see that this development continues. END

bow-tie and flashing lights; 2) a house with light level detector, magnetic sensor on the door, various internal lights, a street light and a burglar alarm, allowing for a variety of programmable actions; and 3) a set of traffic lights (again) with red, amber and green lights, a pedestrian pushbutton switch and a wait light.

These are generally simpler mimics than the Control Pictures, which are aimed at primary schools. Their particular usefulness is that they represent the actual models with which they can be interchanged. Figure V shows these mimics' screen shots.



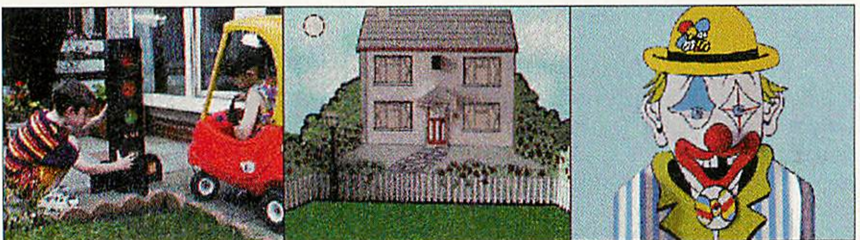
Traffic lights control

In addition to the mimics there is a 'model' of the Traffic Lights Control Picture, which is a printed version on a circuit board with raised light bulbs where the light would be. There are 'banana' plug sockets along the side of the board for connecting to a buffer box and the picture and sockets are mounted on a metal frame. Apart from the missing input switch, this is the same as the mimic but with the advantage of being separate from the computer and helping to convey the concepts of controlling a device external to the computer as opposed to pure screen simulation. As with the Commotion Control Pictures this allows the traffic lights to be programmed via the mimic on a variety of computers, but also acts out on an external model if desired.

Oddly the banana sockets are arranged in an order which bears no resemblance to their order on the mimic, but once the connections from the model to the buffer box are made this should not pose a problem.

Conclusion

These mimics are a useful resource for *Flowol 2*. They provide a series of simulations of varying complexity, designed to develop the ability to


Figure V: The Commotions mimics

Product details

Product:	Control Pictures
Price:	£35
Product:	Commotion Mimics
Price:	£35
Product:	Traffic Lights Control Picture model
Price:	£30
Product:	Clown model
Price:	£23
Product:	House model
Price:	£30
Product:	Traffic Lights model
Price:	£30
Supplier:	Data Harvest, Woburn Lodge, Waterloo Road, Linslade, Leighton Buzzard, Beds. LU7 7NR
Tel:	01525 373666
Supplier:	Commotion, Unit 11 Tannery Road, Tonbridge, Kent TN9 1RF
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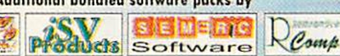
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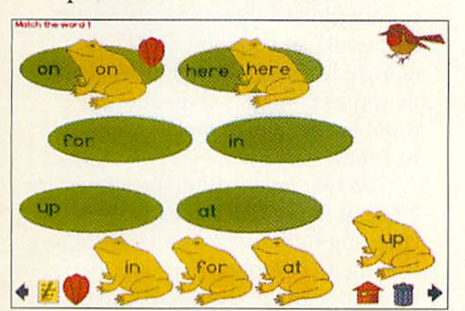
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Getting them young

SEMERC (0161 827 2927) have added a new product to their enormous My World range. Entitled *My World Literacy: The Early Years*, this is a huge educational resource which, unsurprisingly, aims to meet the literacy needs of early readers.

The package consists of 19 sets of screens some of which concentrate on core vocabulary for reception-aged children, while others teach the alphabet in its phonetic and named varieties as well as in upper and lower case. Meanwhile, other screens cover medial vowels, initial letters and initial sounds, as well as rhyming, word searches and so on.



Whichever screen you want to use they are all accessible via the single navigation window. These use real speech audio instructions to help you on your way by picking up, moving, dropping or deleting pictures to complete tasks. The cost is £39.

Commenting on the new addition to the range, SEMERC said "It is fundamental to the My World philosophy that the screens make no attempt to give marks for the way they are used, instead, they invite users to apply their imagination and creativity to find meanings and relationships for themselves. One of the most valuable activities in learning is to be asked why you've done something in a certain way, and to be able to justify it."

Schools online

According to a recently published NOP survey, over half the primary schools in the country are connected to the Net. Commissioned by the British Educational Communications and Technology Agency (BECTa), this NOP telephone survey, carried out in April, suggested that 51 per cent of primary schools were connected to the Internet, compared with a mere 17 per cent in 1997.

Government spokesmen, Charles Clarke, put the increase down to the National Grid for Learning initiative. Meanwhile other estimates and research indicate that around 90 per cent of secondary schools have access while all universities boast connection.

Meanwhile, Chancellor Gordon Brown has reaffirmed the Government's commitment to link every school in the country to the Internet by 2002. Speaking in Newcastle-upon-Tyne, Mr Brown said the city will receive £885,000 to enable it to become the first to have all schools fully linked – three years ahead of the original national target – with all schools in the local authority having at least two multimedia machines with Internet access. In addition, the region will benefit from a computer learning centre in every community.

Mr Brown reminded his audience that the Government has already pledged £500m to launch a scheme to make the country a world leader in the computer age.

His world

Granada Learning (0161 827 2927) is now playing a major role in Singapore's educational computing market and is preparing to move into Hong Kong, Australia and the Republic of Ireland with Mal Hilton in the position of Director of New Business. A former teacher, one of his aims is to initiate a strong presence over the Internet.

What's on

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In brief

Web costs

At present Voss Net (01753 737800) provide a Free Internet for Education service, and they have just announced that they plan to provide *Internet in the Sky* to schools in the UK. This will operate via the Astra satellite through the Luxembourg-based *Europe On Line.*

The aim is to provide Internet access at high speeds in excess of current ISDN-based access. In addition to normal Internet usage, this service will also provide streamed audio and video programming. The higher bandwidth and cost savings, coupled with extra services could well make it a very cost effective Internet solution and it has the bonus of being available anywhere in the UK; something ISDN cannot boast.

Quick browsers

If you are planning to design a Website in the coming term, then take a look at a new survey from Noomedia (020 7488 9800). This reveals that 63 per cent Web visitors site-hop within 30 seconds if a site is too slow to load, bland to look at or difficult to navigate. Consumers cited lack of interaction, unclear links and pages under construction as prime symptoms of a poor site.

Art resource

A new centre for visual arts is opening on Saturday 4th September in Cardiff city centre. Wales' largest gallery for national and international exhibitions of new and historical art it also plays host to *Fantasmic*. This is the UK's first hands-on interactive gallery for schools and families to explore the fun and fascinating world of 'art and seeing'.

There are over 100 hands-on exhibits to push, pull, touch and see. Aimed at children aged from 5-12, the emphasis is on participation and creativity. Two large galleries contain exhibits that change each term with resources and staff on hand to help. For more information on Fantasmic and the Centre for Visual Arts ring 02920 388922.

Contacting me
Pam Turnbull:
educ@acornuser.com

Building numbers

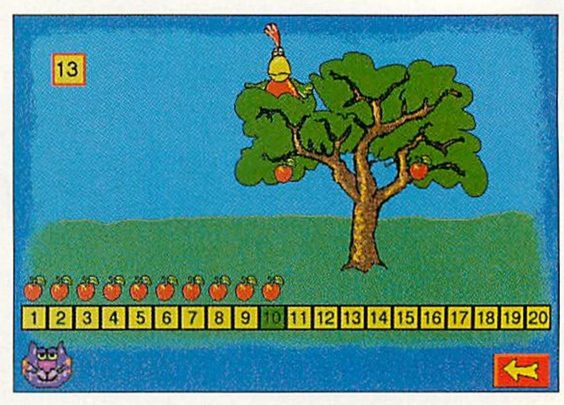
Pam Turnbull looks at a new addition to Logotron's Numbertime range

Last issue we looked at *Numbertime Time*; well, in the same series comes *Numbertime 11-20*. Using the same characters from the television series – Bill and Bernie – they are very similar in style and format.

Loading is very straightforward and you can choose to play the six games at either *Normal* or *Challenge* level. They differ in length and complexity and can be accessed is any order depending on what area of mathematics needs introducing or consolidating. In addition, games can be played over and over by simply clicking the loop icon.

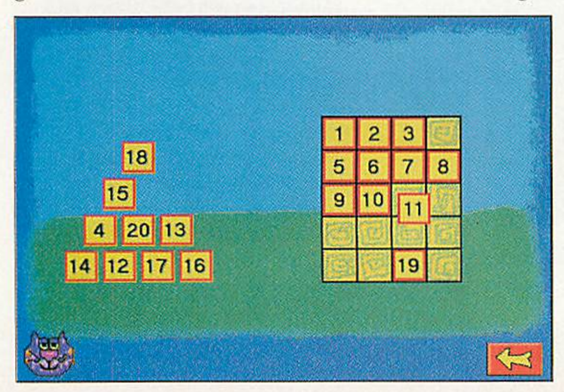
Counting with Bill and Bernie involves children in number patterns. The screen reveals a numberline and a sequence is spoken (and replayed by clicking on Bernie) such as 11, 12, 13, 14 at Normal level, while at Challenge level such a sequence will increase or decrease in steps of one or two. Click on the number you think comes next and the sequence is repeated as Bill jumps along the numberline.

This is quite a short activity; get it right and you're back at the main menu looking for a new game. An incorrect response gives you another go but not the correct answer. A longer activity is provided with *Put the Numbers Back*. Bernie has bumped into a number rectangle (2 x 10, 4 x 5, or 5 x 4) and knocked some of the numbers out which the children need to replace. When complete the next step is to click on all the odd (or even) numbers as requested by the program. A mistake launches an animation where the bricks are shared between Bill and Bernie allowing children to see if the piles are of equal (even) or unequal (odd) height.



Bernie's Number Machine was particularly popular. You have to count the balls in the hopper and find the matching digit on the numberline. Bill then pulls the lever and the balls fill two columns marked with gradations from 1 to 10. There are always more than ten balls in the hopper and these are shown as a 10 and a 5, for instance. The 5 then slides over the 0 to give you 15. This reinforces the concepts of a number between 10 and 20 being made up from a ten plus a unit value. As the hopper is triangular in shape an extension activity is to look at triangular numbers, such as 10.

Each activity comes with a user guide giving advice for teachers and ideas for similar activities. *The Dice Race* practices counting-on skills and is a game which could easily transfer off the computer. A die is rolled and the child must click the matching digit on the numberline to move Bill. Roll again and count on; the addition sum is also shown on screen. A spotted die is used at the Normal level, a numbered one at the Challenge level.



In *The Counting Tree*, you move from addition to subtraction. First the child has to identify the number of apples on the tree, then some fall off and he or she has to click on the numberline to show how many are left, while an equation builds up alongside. Incorrect responses result in apples being lined up above the numberline, which makes them easy to count.

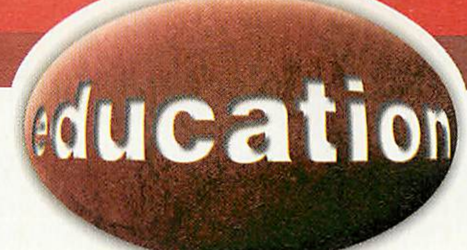
The two levels differ as follows: in Normal mode the finale involves counting how many apples are left on the tree to complete the sum; in Challenge mode the tree is covered by a fluffy cloud and children have to work out the final element of the equation themselves.

The final game is *Counting in Steps* which asks children to use their number knowledge to predict where Bill will land by moving in leaps of 3, 5 or 4. Three leap sizes are always on offer and if you get to the top Bill tips Bernie into a bowl of gunge – very satisfying – but get it wrong and Bill ends up in the glop. Working on factors and multiples in this way is very enjoyable and at the Challenge level success is sometimes only possible with a step of one, thus introducing the idea of prime numbers.

The activities are varied, different and contain ideas which can be used away from the computer within the oral element of the Numeracy Hour. A nice touch are the clear instructions, which exercise listening rather than literacy skills. END

Product details

Product:	Numbertime 11-20
Price:	£27
Ages:	6 to 9
Supplier:	Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 0ZS
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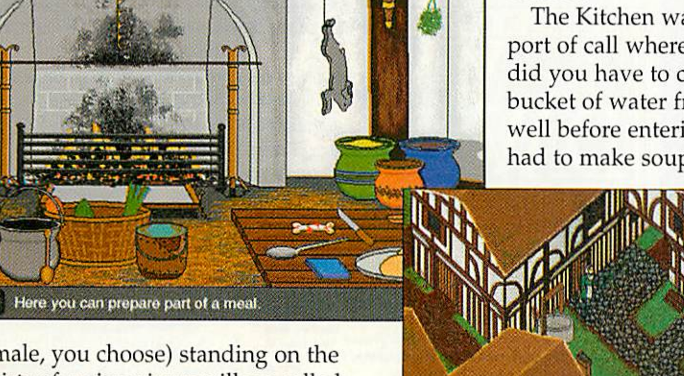


Past lives

Enter a typical Tudor settlement, Pam Turnbull explores

If you are unfamiliar with the ZigZag range then, to give a brief re-cap, this history series started life as a BBC Schools TV series and covers the core study units in Key Stage 2 History. You can therefore access videos and computer programs on Vikings, Anglo-Saxons, Ancient Greeks and Romans – all of which stand alone but work well with the videos, books and resource books supplied by BBC Education (0181 746 1111). The Tudors is the first of these programs to be available on tri-format (RISC OS, Macintosh, PC) CD-ROM.

Starting the program is simplicity itself and you find your character (male or female, you choose) standing on the outskirts of an imaginary village called Walden. Bringing together details from a range of known sites, you can place the village during the reign of Queen Elizabeth I. By using the mouse you move your *guide* along the paths to (and into) houses and workshops.



Step inside and you'll find a task awaiting you and a useful line of text telling you where you are and what you should try to do next. This help can be accessed via the Help button or you can choose to have it always there by pressing the relevant button on the start-up screen. As other information is minimal, and sound is restricted to incidental footsteps and work noises, I'd always take this option.

A map is included in the user guide as are detailed explanations of the nine locations/activities to visit. By the end children should not only know what *pargetting* means, but how to do it. The activities allow children to experiment and if they make a mistake they can start again by leaving the location and re-entering later.

We wandered into the Pewterer's Workshop initially. Following the on-screen prompts, we heated the fire with the bellows before pouring the lead and tin mixture into the mould then putting the cooled casting on the lathe to chisel away the excess and polish our finished plate. Creating a piece of pewter in this way impressed the children with the time and skills involved and led to discussion on how you knew when the pewter was hot enough and why a lathe was needed.

The Kitchen was our next port of call where not only did you have to collect a bucket of water from the well before entering but then had to make soup and roast chickens on a spit. It was here that we started to run into problems though. Quite simply the program requires you to place your pointer in too precise a spot before it will respond. In addition, response is not always instant so you are unsure whether you are doing something wrong.

For instance, put the bone into the pottage and it disappears instantly into the cauldron, but placing the cut leek into the mixture is a little more problematical. This is a major niggle especially as you have to be careful where you click or you can find yourself unable to get into the Parlour or Printer's Workshop.

Although the graphics are consistent with the others in the series, the style is starting to show its age. However, the activities are excellent and well thought out. Once we worked out how to move the tailpost on the windmill – a wooden construction based on one from Cambridgeshire – and so turn the whole structure into the wind, the cutaway interior was nicely presented. The program also allows you to save as a drawfile and print out any images you particularly like or want to use again.

Logotron missed an opportunity in the Printer's Workshop, I thought. Here you have to create a poster – John-Bull-printing-set style – but you don't have to correctly position the letters; just drag them to the plate and the program puts them into position. This does mean that you can't make a mistake but my testers would have liked to have made and printed their own posters.

However, the children did become immersed in tasks as varied as shooting a duck, dressing a lord and lady, and making butter. The program lends itself to small group work, allowing for discussion and explanation of topics drawn from the program and from other work done in class. Logotron have provided eight practical and theory worksheets which support and extend the CD-ROM with ideas for further work. An excellent addition to school resources – but ensure you know your way around its idiosyncrasies yourself, before letting the children loose on it. **END**

Product details

Product:	The Tudors
Price:	£34
Ages:	7 to 11
Supplier:	Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 0ZS
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Fax:	(+44/0) 1223 425349
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Eight channels

Mike Cook makes his data digital

While looking back through my projects I can see there are basically two types, ones that show you how to make a specific item and others that give you the basic building blocks of this interfacing business. I like to call the second of these 'enabling projects', and this month we have one of those. Next month we shall see how it can be used in a specific project but for now let's just concentrate on this simple interface.

As you know all computer operations are digital but most of the world is analogue. While I have covered analogue-to-digital converters you have to go right back to February 1987 since we looked at an 8-input converter. Then I used a parallel chip, this month I would like to look at a more flexible serial chip. The chip in question is the ADC0838 and is in the same family as the ADC0831 that I used in the sound sampler and oscilloscope projects last year.

While it is simple to use in any one application the ADC0838 is also very flexible and it is this flexibility that complicates matters; you have to know what you can ignore. The data sheet for this device won't fit on the cover disc as it is about 650K. However, I will put it on the next CD and in the meantime you can download it as a PDF file from http://www.national.com/ds/AD/ADC0831.pdf

It's important to remember with chips like this that they don't contain eight A/D converters but only one, with an 8-way switch on the front end. This chip is more complex than most in that you can configure the inputs in different ways. For example you can have eight single-ended inputs. This means that the voltages are measured on all the inputs with respect to earth or zero volts.

You can also have eight pseudo-differential inputs, that's where all the input voltages are measured against a single reference. This means that if there is an offset voltage, or constant DC voltage on the lines you want to measure you can put this voltage on the common input and it will disappear from the reading, leaving you with a more accurate and wider range of measurements.

Then you can have a true differential input. With this you are only measuring the difference between two voltages, the chip uses pairs of inputs for this so you can only have four differential voltages. Finally you can have a mixture of single-ended and differential inputs.

The reference voltage is what you feed into the device that defines the input voltage that produces the maximum digital reading. For an 8-bit converter this means that each digital step is one 256th of the reference. In

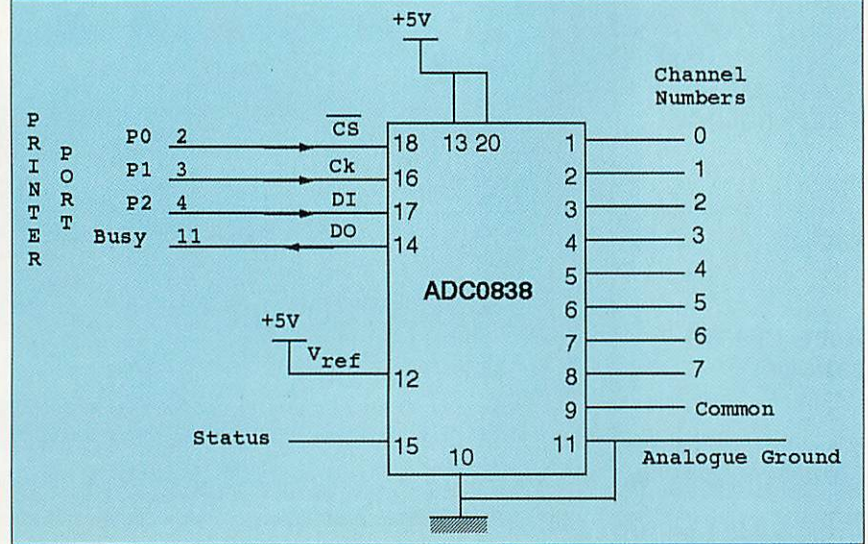


Figure I: Experimental test circuit

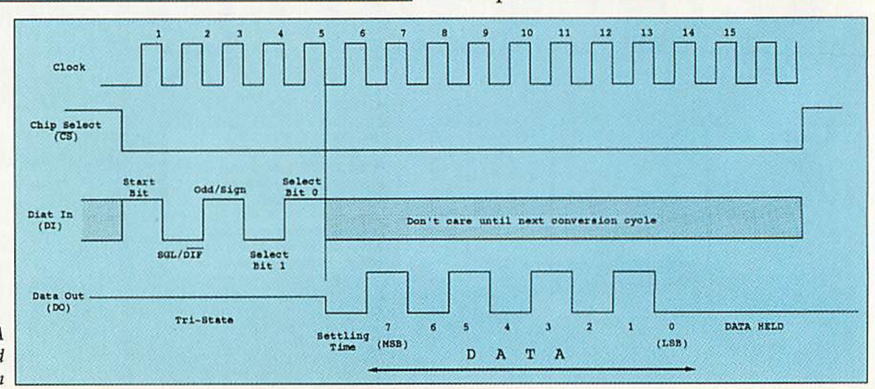


Figure II: A simplified timing diagram



MUX Address				Analog Differential Channel-Pair #							
SGL/DIF	ODD/SIGN	SELECT		0		1		2		3	
		1	0	0	1	2	3	4	5	6	7
0	0	0	0	+	-						
0	0	0	1			+	-				
0	0	1	0					+	-		
0	0	1	1							+	-
0	1	0	0	-	+						
0	1	0	1			-	+				
0	1	1	0					-	+		
0	1	1	1							-	+

Table I: Differential MUX Mode

MUX Address				Analog Single-Ended Channel #								
SGL/DIF	ODD/SIGN	SELECT		0	1	2	3	4	5	6	7	COM
		1	0									
1	0	0	0	+								–
1	0	0	1			+						–
1	0	1	0					+				–
1	0	1	1							+		–
1	1	0	0		+							–
1	1	0	1				+					–
1	1	1	0						+			–
1	1	1	1								+	–

Table II: Single-Ended MUX Mode

most chips this ranges from 3V to 5V which means that any signal you feed in has to be in this range. This chip however allows that reference voltage to be down as low a 0.1V so that in some cases you don't need to amplify the signal you are trying to measure at all. However, when running at such a low reference voltage you need to make sure that any noise pick-up is minimised.

Figure I shows the circuit of an experimental test set-up you can use as a basis for most projects. The converter is operated using just four signals, chip select, clock, data in and data out, these are waggled up and down and sampled according to a timing diagram. Now a timing diagram is simply a story of what the signals do in time, it shows the sequence of operations that have to take place to get the thing to work.

The one in the data sheet is more complex because it shows options for getting the data out, least significant bit first, as well as most significant bit first, hence Figure II is a simplified timing diagram showing all the signals you need to use in our configuration. You read it from left to right, a bit like a story.

A conversion cycle starts when the chip select line goes low and the clock starts going up and down. Then the converter chip reads the state of its data input line on the rising edge of each clock, so here our computer has to waggle this line just before or after the falling edge of the clock. As our program to control the converter is generating the clock this is a relatively simple thing to do. This data sets up how the converter's going to operate and what channel it is going to read.

The diagram shows these bits high and low respectively but it is only the first or start bit that needs to be high. Once the converter knows how to set it's input switches, or multiplexes, there is then one clock period when they settle down. Therefore on clock cycle 6 the first and most significant bit, of the result is put on the data output line. Subsequent clock pulses produce the other bits of the conversion. Not shown on the diagram is the status line, this is high throughout the settling time and data clock out time and could be used to gate a sample-and-hold circuit if the application called for one.

So if you want to use this converter you will have to write a program that waggles and samples the input/output lines according to that diagram. Before you can do this however, you have to know how you want to set up the multiplexes.

The SGL/DIF bit determine if the conversion is going to be single-ended or differential, the bar in the timing diagram over the DIF means that a differential mode is selected when this bit is low and a single-ended input when it is high. This bit being high or low affects how the other bits operate. Table I shows how these other bits work in the differential mode. You will see that basically the select bit chooses the differential channel which consists of pairs of inputs, where as the ODD/SIGN bit allows you to swap the polarity of the differential inputs. Remember in a differential input you are measuring the difference between two inputs and so you will get a positive measurement if the +ve input is greater than the -ve one, it will be a negative result if it is the other way round.

Now look at Table II, this shows what happens in the single-ended mode or the pseudo-differential mode. You can see that this mode is selected by setting the SGL/DIF bit. It's a bit difficult to see at first but the ODD/SIGN bit now becomes the least significant bit of a channel select word with SELECT 0 and 1 making up the other two bits.

I think this is a prime example of bad data sheet writing, surely it would have been better to simply renumber the analogue inputs so that the ODD/SIGN bit became the most significant bit of the select word. After all, it is sent before any of the other select bits. Anyway that's how it is on the data sheet. Note that the common input now becomes the negative input for the pseudo differential mode. To use this mode simply connect the common to the common negative signal. Note that when this is connected to earth you automatically get single-ended inputs, there is nothing else to do.

Armed with all this we are ready to write the code to drive the converter. There are two versions on the cover disc, one in BASIC and the other in machine code. It's simple enough in BASIC as we don't have to bother about timing; even on the fastest machines it's too slow to exceed the converters speed limit. With machine code it is slightly more complex, however when accessing the printer port you can't get any faster than 0.5 uS because of the hardware.

If you want a delay you simply use dummy reads or writes. A dummy read is simply a read you do to waste time not to do anything with the result. In this way you can get delays that are consistent across all flavours of ARM processor. As is normal I have embedded the machine code inside a simple BASIC program.

If you are running this with the hardware you will need to supply a test input voltage, this can simply be done by connecting a potentiometer across the 5 volt supply and wiring the wiper to the input. To test the differential mode you need two potentiometers one for each input.

Well there you have it, a flexible 8-input analogue-to-digital converter. Next month we will see this in action for a real application. **END**

Rambles though Acorn



Mike Cook harvests more questions

My pet hate this month is reserved for those who think it is correct to put two spaces after a full stop. This really is a hang-over from manual typewriter days but seems to have got itself into all sorts of books. It's even taught as correct at schools and no amount of argument concerning proportional-spaced fonts and kerning seems to cut any ice with some dullards. The attitude is that as it is in a book so it must be right – well *Mein Kampf* was a book and was that right?

Here's another problem that's been driving me mad, we have serial numbers, so why don't we have parallel numbers?

Apologies to all those who have been trying to download my articles from http://math.mmu.ac.uk/Physics/Acorn there has been a bit of trouble with the server which meant that the articles and software were not available for some time. I have now fixed this, so hopefully all should be well.

Now, this contributor wants to remain anonymous, which is fine by me. However, if you want to contribute but don't want the world to know then at least tell *me* your name; I won't publish comments sent to me anonymously:

"I have only just seen the discussion in *Acorn User* issue 209 about the 'Noisy Risc PC'. Another possibility for the source of noise on the Risc PC is the CD-ROM drive. The 8x drives supplied with the more recent machines are a bit 'rumbly' and noticeably noisier than the fan and ADFS/SCSI harddiscs put together.

"I am not entirely sure why the CD-ROM drives remain spinning after start-up. I suspect it is linked to the PC cards but I have not investigated fully. A simple work around to stop the racket is to issue the following commands under RISC OS, after the machine has finished its Windoze start-up routine:

```
*CDFS
*Stop
*ADFS
```

"This can be done manually via the command line, by setting up a simple Obey file, or whatever. Unfortunately, putting it in the *!Boot* file doesn't seem to work, perhaps because Windoze starts up the CD-ROM drive after RISC OS start-up is complete?"

Next Russell Palmer has found he now has to face up to a bit of bragging, he writes:

"I've recently been helping a friend with some lighting in our college theatre and have boasted to him that I would be able to produce an interface and necessary software to allow him to control the lights from my Risc PC and, ultimately, his laptop PC. At present, we are struggling with analogue lighting boards which are time-consuming and limiting. Having done nothing more than GCSE electronics, I am a bit lost as to where to start with the hardware side of things, although I'm more than capable of writing the software.

"Hoping for inspiration, I have flicked through all the 'Run The Risc' articles I have copies of, before finding the whole list on your Website. I got my hopes up when I spotted an article detailing a lighting controller but soon realised that the dimmer racks I am working with are antiquated compared with the ones you used. So I thought I'd start from the basics and study your May/June 1995 articles introducing how to write software and make an interface which can be controlled from the parallel port.

"Would you be so kind as to suggest



where you would start on this project. I'd like to be able to control two dimmer racks, each with six channels on them, ideally by specifying the channel then updating its intensity in one command. As far as I can tell, there is a control line for each channel, on which the voltage is held high (15V) and must be varied from 15 to 7.5 for intensity 0-100%. A fixed 15 volt supply is provided from the dimmer racks. I have determined this by poking around with a multimeter.

"Am I right in choosing the parallel port rather than the serial port? Can you also give me a few leads on porting the software to PC? I can program in C so that shouldn't be a problem. I just have no idea how to access any I/O ports.

"The hardest part for me will be the electronics, but I'm fairly competent with a soldering iron and am willing to experiment. However please remember that up till now, I have done little more than play around with a few simple timers, op-amps and the odd logic gate, as well as your basic components. With a bit of luck this could be the start of my age-old intention to do more electronics."

It sounds like what you need is a Digital-to-Analogue converter, well, several in fact. This will allow you to generate a variable voltage between 0 and 5 volts. You will then need to get this into the voltage range you want, which will involve use a times-two amplifier and a level shifter to elevate it into the voltage range you need.

Assuming that there is no common earth between the control voltage and your computer you can connect one end of the desk's control voltage to the negative supply of your op amp, and the other end to the output. If you choose to use a +/- 7.5 volt supply for this then this will serve as the level shifter itself. If this isn't practical then you will have to use +/- 15 volt op amp supply and use the common earth. The level shifter can be made by having a potential divider and your D/A signal feeding into an analogue adder or mixer circuit.

However, pick your op amp carefully as it needs to be able to operate at this voltage, some can't work that high. Maplins sell a dual D/A converter PM7528HP for £5.40 that is suitable for this method. They also have the DAC0801 for £3.00 that looks like it works up to +/- 18 volts, so that could simplify the level shift requirements at the expense of some resolution of the control level. That is, you only put in a restricted range of high numbers. Another alternative is that you could use a digital pot like the one in the September '99 article. Then all you would need is a resistor in the earth leg of the potentiometer, but again make sure that it can handle voltages as high as 15 volts.

Assuming you go for the D/A option, get one channel working first, then you have the problem of driving 12 D/As from the printer port. It's quite simple, connect the inputs to the D/As in parallel to the data outputs of the printer port. Then use a demultiplexer on 4 of the printer control outputs to generate your 12 (16 actually) individual strobe signals for each separate D/A.

Look at the 'New Ports for Old' article in September '95 for details on multiplexers; note you only need a small part of this circuit. Then in software all you need to do to set a channel to a brightness is to output the value to the printer port, then output the channel number to the control lines.

So that's just two calls to the operating system if you do it in C or BASIC. For writing a bit-pattern in a number stored in X to the data bits in BASIC use:

```
SYS "Parallel_Op",1,X
```

Before the port will act as an output bit 5 in the control register must be zero. The control register is a bit more tricky as the end result is determined by a formula:

```
new state of bits = (old state of
bits AND R2) EOR (R1)
```

Using:

```
SYS "Parallel_Op",1,R1,R2
```

Basically a 1 in any bit position of R2 zeros that bit, and a 1 in any bit position of R1 toggles or inverts that bit. So to clear a bit to zero have it set in R2 and not set in R1, and to set a bit to one have it set in both R2 and R1. So to set the printer ports to output use:

```
SYS "Parallel_Op",1,0,&20
```

As to porting it over to a PC you will find accessing the printer port is not so easy, your best bet is to look at the book *PC Interfacing* by Pei An, published by Newness. END

Contacting me

Mike Cook:
rambles@acornuser.com

Louise from Todmorden is having trouble waking up her elderly machine:

"I have been experiencing a minor problem with my four year old SA Risc PC recently. Occasionally when I switch on, the computer will freeze up at some point, usually soon before or after the banner has appeared on screen. From then on the only way to come out of this situation is to switch off and on again. However this problem is now becoming more frequent, perhaps approximately one out of 15 power-up, instead of once in a blue moon. It's quite irritating actually due to increase in frequency of this fault. Have you any idea what the cause or problem might be."

One thing you must avoid at all costs is turning your machine on and off, if you didn't have disk problems before you certainly will after doing that. Use the reset button at the back of the computer, this is a hard reset and to the processor is the equivalent of turning the computer on and off but without the potential damage to the disc drive.

It is likely that you are having trouble in one of two areas. First of all it could be that the rechargeable battery is going, if so your computer is likely to forget the time as well. The other is that it is your harddisc giving problems during boot-up.

You can bypass the harddisc access during boot-up by holding down Shift as you power it up or by pressing the reset key. If this starts up every time then it is your disc that is the trouble. Back up everything and then run a disc repair utility, it is likely that the bad sectors can be mapped out. If not, reformatting the disc might help.

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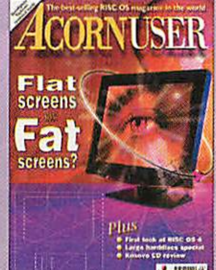
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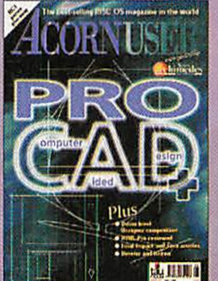
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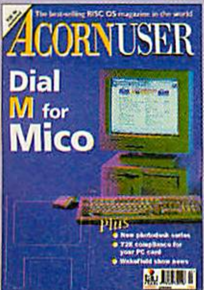
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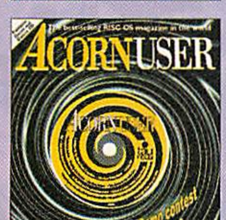
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A new shell

I noted of late a few comments in this page as to how more users could be brought into the RISC OS community. In other words how to advertise on the cheap. One possibility for someone with more programming skill than me would be to write a RISC OS-like replacement shell for Windows, and release it onto the net.

Such things are quite popular among many PC users. A lot of whom spend much of their time trawling the net for software to make their 'preferred OS' more pleasant to use. And with the advent of more worthy native equipment appearing this may result in 'defectors' to RISC OS proper.

There is also the point that many of us are saddled with PCs at home or work who may welcome the chance to make them behave more like RISC OS.

Any Takers?

Dr Charles Lane, by e-mail

I've just spent the last twenty minutes trying to track down a Website where I've seen just that; a RISC OS shell for windows. I couldn't find it, but it would have been useful to illustrate what you mean.

During the search I came across some articles covering this whole business of shells. Apparently companies such as Compaq are shipping their computers with their own shells (in this instance Compaq TabWorks), which are launched before Windows can display it's banners.

These shells help provide a corporate image and to some extent bind the user to the hardware company.

Microsoft have 'persuaded' OEMs (like Compaq) to drop the scheme. The american DOJ, as part of it's antitrust suit, want to force Microsoft to give manufactures the freedom to ship their products with any desktop interface they want.

Microsoft are refusing to back down and claim 'customer confusion' led to the decision to clamp down on shells. "Customers thought they hadn't received Windows when an OEM's shell sat on top of it".

Of course, they soon realised they did have Windows installed when the computer started to crash every ten minutes. If anyone finds the site I was looking for, or produces their own RISC OS shell for Windows then do let me know.

Dunstan Orchard

Eurofighter – author's notes

I would like to comment on the review of *Eurofighter Typhoon* in the August issue of *Acorn User*. I think Richard Goodwin found out that this software does unfortunately require the current highest spec machine. It was a dilemma I was faced with, whether to write a game or a true flight sim. I decided on the latter, partly for selfish reasons and also as there was no such animal for RISC OS.

The *MIG29* software is the nearest anyone has come to a real flight sim for RISC OS, but the machines of the time lacked the necessary power to run a high res 'virtual world' with all its complexity, plus there was also the concern of selling enough copies to make it commercially viable.

A true flight sim with a 'virtual world', by it's very nature, will not have the crash-bang-wallop of a shoot 'em-up game. If the world is to be 'virtual', things have to run in real-time, all the time. So if you fly 100 miles at 500 knots it must take as long as it does in the real world. It certainly doesn't make for immediate action, which explains why so few software houses consider producing flight sims. I had no such commercial constraints. It was a pity that no mention was made of *Typhoon's* Mission scenario, as that is the major part of the software and where all the 'action' is.

I know the 300 square kilometre area of operations will be at the limit of most peoples endurance and time constraints, but that is the nature if the beast.

Also the flight school *is* extremely hard, but if it is to represent anything like the full size aircraft then it has to be. The 'dumb bombs' are really wicked, but that shows how hopelessly inaccurate real bombs are, although the situation is better on the missions aircraft as you can use them in diving attacks which is much more effective. If anyone finishes flight school they can be justly proud of themselves, as it's no mean feat, and I'm sure they would be welcomed with open arms by the RAF.

The game *is* very difficult, but I make no apologies for it as it has to be that way. Perhaps when some of the *Typhoon* pilots master the flying I can get some suggestions on future upgrades.

You might get frustrated with *Typhoon*, but at least you now have the choice of a real flight sim for RISC OS. It's a curious thing in the old Acorn community compared with the PC world. If they get a piece of software that requires the latest Pentium they seem to relish it, where as we seem to want it to run on an A3000. Perhaps the new machines that are on the way will cure that, and who knows, maybe I'll write a complementary 'game' that will run on a RiscStation 7500 and keep Richard happy.

Dave Watts

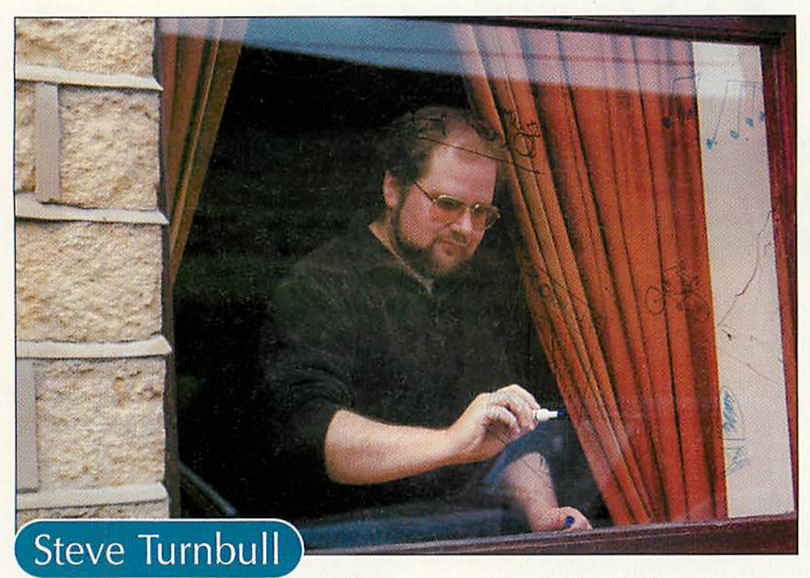
Good deal

I recently had an urgent requirement for an unusual type of ribbon cable and e-mailed several companies who advertise in *Acorn User*. The response I had was absolutely wonderful, especially considering the nominal amount of profit to be made by the respondents. I would like to thank Stuart Tyrrell Developments, Eesox, Alsystems and Aleph1 for their assistance. I was a soul lost at sea but the Acorn Community lifeboat rescued me!

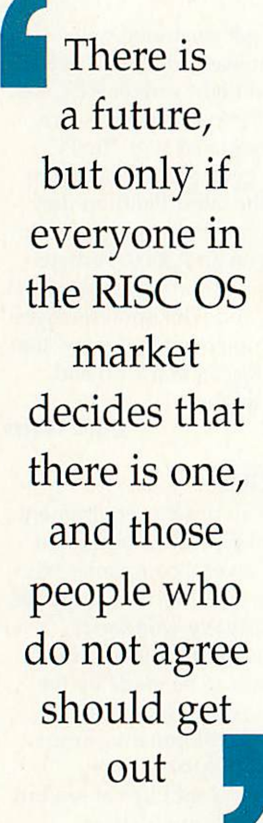
Malcolm Brooks, by e-mail

Well done those companies. Again and again we hear of excellent service from the Acorn Community dealers; I'm sure this customer care has been a contributing factor to the loyalty of so many RISC OS users.

Dunstan Orchard



Steve Turnbull



There is a future, but only if everyone in the RISC OS market decides that there is one, and those people who do not agree should get out

"I am a cat person, but I take the dogs for their walks." That's how Steve Turnbull sees himself. His daughter Deanna has a different view: "He sang this song and he did it really loud and asked if everyone at the back could hear him. He was really funny."

The rest of us know Steve better as MD of Tau Press and owner of *Acorn User* – the seeds of which were sown when IDG Media decided to take *Acorn User* from perfect bound to stapled.

"I got very, very angry," claims Steve – this is hard to imagine; Steve is one of the calmest people I know. "I save it up for effect, it makes more of an impression. I went to the MD of IDG Media and told him: 'This is no good!' He said: 'What are you going to do about it?' I said: 'Give me the magazine,' and he said: 'All right'."

It took a year to get it sorted out, so on Steve's 40th birthday he was officially in charge of *Acorn User*, little knowing what was just around the corner. Steve had his first staff meeting on Black Thursday, during which he got a phone call telling him what had happened at Acorn.

"I have always had faith in the RISC OS market; if I hadn't I wouldn't be doing this. It is my personal feeling that if anyone thinks: 'We are never going to last, so we might as well just carry on for another couple of years and that will be it.' they might as well leave now.

"We have done things at Tau Press that an ordinary businessman would not dare do. I calculated that when I started, I needed £90k capital and I did not get anywhere near that. Yet we are running a successful company with a magazine in a market that is supposed to be dying. There *is* a future but only if everyone in the RISC OS market decides there is one, and those people who do not agree should get out."

It's hard to believe that Steve nearly got kicked out of school for skipping lessons; his excuse is that he had found the school's computer and the delights of programming. It's also hard to imagine him as a singer in a rock-and-roll band when he was at university. It's easier to think of him on some local paper, working his apprenticeship in journalism, but that wasn't how it happened at all.

"My father had been a magazine editor, so it was something I swore I would never do. After typing in a game from *Beebug* magazine I thought 'I can do better than that', so I wrote a little adventure game in which you had to stop your ship from being smashed to pieces in an asteroid storm. *Micro User* bought it and used it as part of their *Arcade Games Compendium*.

"Then out of the blue in 1986 I got a phone call from Pete Davidson, asking me if I wanted to come and work for *Micro User*. I did and I worked my way up to editor, getting my wife Pam involved along the way and changing the magazine's name to *Acorn Computing*."

When Redwood, the publishing part of the BBC, decided that *Acorn User* did not fit with the rest of its portfolio, Europress bought it.

"Eventually Europress decided to close the smaller of the two Acorn magazines. I thought I should have been editor of *Acorn User*, but they decided to maintain continuity. I left and spent a year in the wilderness doing programming. Eventually Mark Moxon decided he did not want to play that game anymore and they invited me back."

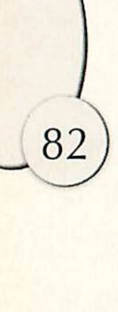
Steve is a Scientologist and has been since he was a teenager – he runs the business along Scientology principles, although there's only one other Scientologist working there.

"Sometimes I look back and realise that, in a way, Scientology rescued me. I was 14 and so horribly geeky and introverted, in the worst possible sense, I would not have been able to hold down a job. It was my father who suggested I should do it. What Scientology does is teach you how to be extrovert and handle life, so that life does not handle you. It let's you think for yourself. You don't get 'saved', it's non-denominational and you don't need faith – it's just practical application of principles.

"If it weren't for Scientology, *Acorn User* probably wouldn't exist any more. I would not have had the will, guts, knowledge or determination to take over and *Acorn User* would have been closed after Christmas just as *Archimedes World* was."

Wherever Steve – a Scientologist helping to keep the Acorn market alive; or a cat person taking dogs for a walk – gets his determination from, the result is that *Acorn User* is still here, and that's surely something to be grateful for.

Jill Regan



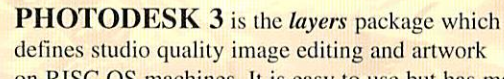
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